



## REMEDIATION WORK PLAN

Property:

**Concho Operating, LLC.  
COI Empire South Unit #015  
Eddy County, New Mexico  
Unit Letter "E", Section 08, Township 18 South, Range 29 East  
Latitude 32.7637024, Longitude -104.103363  
2RP-3894**

April 2017

Prepared for:

**Concho Operating, LLC.  
600 West Illinois Avenue  
Midland, TX 79701  
Attn: Mrs. Rebecca Haskell**

Prepared by:

---

Thomas Franklin  
Environmental Manager

---

Jack Zimmerman, P.G., C.P.G.  
Senior Geologist

## Table of Contents

<b>1.0 INTRODUCTION .....</b>	<b>1</b>
<b>1.1 Site Description &amp; Background .....</b>	<b>1</b>
<b>1.2 Project Objective .....</b>	<b>1</b>
<b>1.3 Standard of Care.....</b>	<b>1</b>
<b>1.4 Reliance.....</b>	<b>2</b>
<b>2.0 SITE RANKING &amp; PROPOSED REMEDIAL ACTION GOALS .....</b>	<b>2</b>
<b>3.0 INITIAL RESPONSE &amp; TRENCH ACTIVITIES.....</b>	<b>3</b>
<b>3.1 Initial Response .....</b>	<b>3</b>
<b>3.2 Sampling Activities.....</b>	<b>3</b>
<b>3.3 Soil Sampling Analytical Results.....</b>	<b>3</b>
<b>4.0 LABORATORY ANALYTICAL METHODS .....</b>	<b>3</b>
<b>5.0 WORK PLAN .....</b>	<b>4</b>

## APPENDICES

### Appendix A

Figure 1 - Site Vicinity Map  
Figure 2 - Site Vicinity Map  
Figure 3 - Site Map  
Figure 4 – Proposed Excavated Depths Map

### Appendix B

Table 1 - Soil Analytical Summary Table

### Appendix C

Laboratory Analysis and Chain-of-Custody

### Appendix D

Initial C-141

### Appendix E

Groundwater Data

## **WORK PLAN**

**Concho Operating, LLC.  
COI Empire South Unit #015  
Eddy County, New Mexico  
Unit Letter "E", Section 08, Township 18 South, Range 29 East  
Latitude 32.7637024, Longitude -104.103363  
2RP-3894**

April 2017

### **1.0 INTRODUCTION**

#### **1.1 Site Description & Background**

American Safety Services Inc. (ASSI) has prepared this Work Plan for the Concho Operating, LLC. (COG) COI Empire South Unit #015 (referred to hereinafter as the "Site" or "subject Site"). This Work Plan is based upon the interpretation of the data collected by ASSI.

The COI Empire South Unit #015 is located in Unit Letter E, Section 08, Township 18 South, Range 29 East, Eddy County, New Mexico (GPS 32.7637024, -104.103363).

Remedial actions will be conducted in accordance with New Mexico Energy, Minerals, and Natural Resources Department (EMNRD), Oil Conservation Division (NMOCD) rules (*NMAC 19.15.29 Release Notification*) and the NMOCD *Guidelines for Remediation of Leaks, Spills and Releases* as guidance.

#### **1.2 Project Objective**

The objective of the Work Plan is to present documentation of the activities that were performed to date and to request an effective means to remediate the Site.

#### **1.3 Standard of Care**

ASSI's services are performed in accordance with standards provided by a firm rendering the same or similar services in the area during the same time period. ASSI makes no warranties, express or implied, as to the services performed hereunder. Additionally, ASSI does not warranty the work of third parties supplying information used in the report (e.g. laboratories, regulatory agencies, or other third parties). This scope of services will be performed in accordance with the scope of work agreed with the client.

## 1.4 Reliance

This report has been prepared for the exclusive use of COG, and any authorization for use or reliance by any other party (except a governmental entity having jurisdiction over the Site) is prohibited without the express written authorization of COG and ASSI. Any unauthorized distribution or reuse is at the sole risk of COG. Notwithstanding the foregoing, reliance by authorized parties will be subject to the terms, conditions and limitations stated in the proposal, the report, and ASSI's Agreement. The limitation of liability defined in the agreement is the aggregate limit of ASSI's liability to the client.

## 2.0 SITE RANKING & PROPOSED REMEDIAL ACTION GOALS

The Site is subject to regulatory oversight by the NMOCD. To address activities related to releases, the NMOCD utilizes the *Guidelines for Remediation of Leaks, Spills and Releases* as guidance, in addition to the NMOCD rules, specifically NMAC 19.15.29 *Release Notification*. These documents establish investigation and abatement action requirements for sites subject to reporting and/or corrective action.

In accordance with the NMOCD's *Guidelines for Remediation of Leaks, Spills and Releases*, ASSI utilized the general site characteristics to determine the appropriate "ranking" for the Site. The ranking criteria and associated scoring are provided in the table below:

Ranking Criteria			Ranking Score
Depth to Groundwater	<50 feet	20	0
	50 to 99 feet	10	
	>100 feet	0	
Wellhead Protection Area, <1,000 feet from a water source, or; <200 feet from private domestic water source.	Yes	20	0
	No	0	
Distance to Surface Water Body	<200 feet	20	0
	200 to 1,000 feet	10	
	>1,000 feet	0	
Total Ranking Score			0

Based on ASSI's evaluation of the scoring criteria, the Site would have a Total Ranking Score of 0. This ranking is based on the following:

- The depth to the initial groundwater-bearing zone is 175 to 200 feet at the Site.
- The impacted area is greater than 200 feet from a private domestic water source.
- Distance to the nearest surface water body is greater than 1,000 ft.

Based on a Total Ranking Score of 0, cleanup goals for soils remaining in place include: 10 milligrams per kilogram (mg/Kg) for Benzene, 50 mg/Kg for Total Benzene, Toluene,

Ethylbenzene and Xylene (BTEX) and 5,000 mg/Kg for Total Petroleum Hydrocarbons (TPH) and 600 mg/Kg for Chloride. Currently, the NMOCD is considering adjusting limits for Chloride concentration in soil from 250 mg/Kg to 600 mg/Kg. Those limits are not included on the current ranking score.

### **3.0 INITIAL RESPONSE & TRENCHING ACTIVITIES**

#### **3.1 Initial Response**

On September 21, 2016, ASSI personnel performed a site inspection in response to a lightning strike and subsequent fire at the COG COI Empire South Unit #015 facility. The site inspection was in response to a release directly to the ground of Ninety (90) barrels (bbls) of crude oil. None of the fluids were recovered due to burning in the fire. The release impacted approximately fifteen thousand-sixty (15,060) square feet of production pad and adjacent pasture area.

#### **3.2 Sampling Activities**

Sampling activities were conducted on September 21, 2016 by ASSI using a stainless steel hand auger. Mr. Ryan Reich, an ASSI environmental professional, was present to document onsite activities (written and photographic). Fourteen (14) auger holes were installed, using a stainless steel hand auger, each to various depths ranging from surface (0') to three and one-half (3.5) foot below ground surface (bgs) (Table 1) and shown on Figure 4. Discrete samples were collected from all auger hole locations at the following intervals 0'-1', 1'-1.5', 1'-1.5', 2'-2.5', and 3'-3.5' bgs. Soil was field screened for Chloride utilizing electro conductivity during sampling activities.

#### **3.3 Soil Sampling Analytical Results**

Forty-four (44) soil samples were collected from fourteen (14) auger hole locations on September 21, 2016 by ASSI personnel for laboratory analysis. The samples were analyzed for BTEX, TPH, and Chloride (Table 1). Analytical results were compared to the NMOCD *Guidelines for Remediation of Leaks, Spills and Releases* (Section VI A. Contaminated Soils) and show Chloride exceedances exist above the NMOCD clean-up goals at auger hole location AH-5 from surface to three and a one-half (3.5) foot bgs. Vertical delineation has not been achieved at sample location AH-5. Accordingly, NMOCD's threshold of 600 mg/Kg to satisfy clean-up goals has not been met.

### **4.0 LABORATORY ANALYTICAL METHODS**

The samples were analyzed for TPH GRO/DRO utilizing EPA method SW-846 8015, BTEX using EPA method SW-846 8021B, and Chloride utilizing EPA method SW-846 300.1. Copies of the laboratory analysis are provided in Appendix D.

Soil was collected, in laboratory prepared glassware, placed on ice, and packed in a cooler. The sample coolers and completed chain-of-custody forms were relinquished to Cardinal Laboratories in Hobbs, New Mexico for normal turn-around time.

Figures 3 and 4 are Site diagrams that indicate the approximate location of the auger holes installed in relation to pertinent land features and general Site boundaries, which is included in Appendix A.

## **5.0 WORK PLAN**

Based upon the data collected and the work completed by ASSI, the constituent of concern (COC) at sample location AH-5 has not been vertically delineated. Laboratory analytical data indicated elevated Chloride concentrations were present from surface to three and one-half (3.5) feet bgs. Furthermore, laboratory analysis shows that TPH and BTEX concentrations are below the NMOCD clean-up goals.

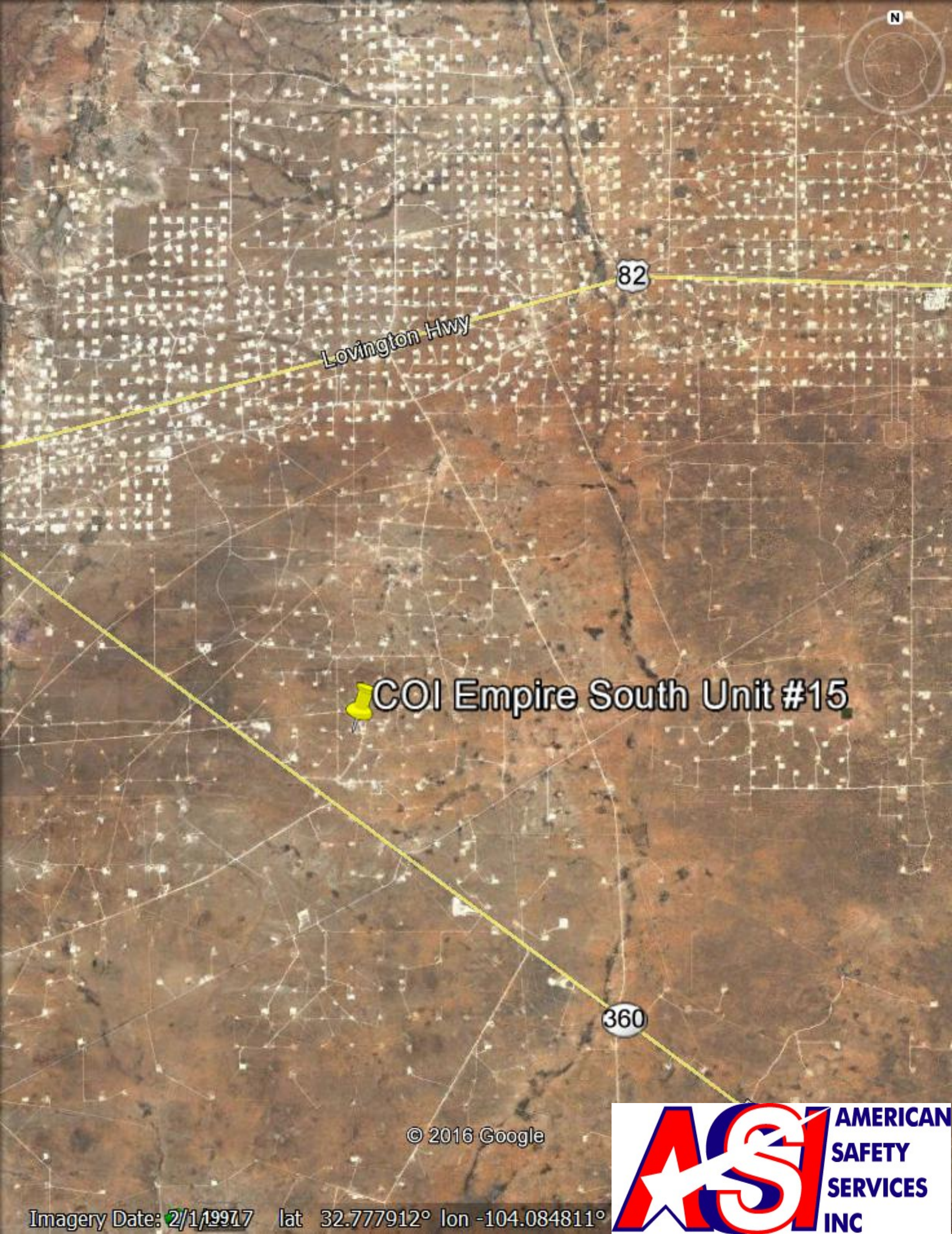
Based on the analytical data, COG and ASSI propose to remove the impacted material as presented in Table 1. The area adjacent to and around location AH-5 will be excavated to a depth of approximately three and one-half (3.5) foot and a test trench will be installed at the bottom of the excavated area to further delineate Chloride concentrations at depth. All material excavated will be stockpiled onsite and subsequently removed (hauled away) offsite to a proper disposal facility under appropriate manifest. The excavated area will then be backfilled to grade with clean material and the surface grade contoured to the surrounding landscape.



## APPENDIX A


### Figures





Lovington Hwy

82

 COI Empire South Unit #15


360

© 2016 Google

Imagery Date: 2/1/1997 lat 32.777912° lon -104.084811°





 COI Empire South Unit #15



September 14, 2016

# COI Empire South Unit #015

## COI EMPIRE SOUTH UNIT #015

(30-015-22236)

### Legend

- AOI
- TANK

32.763494, -104.103221

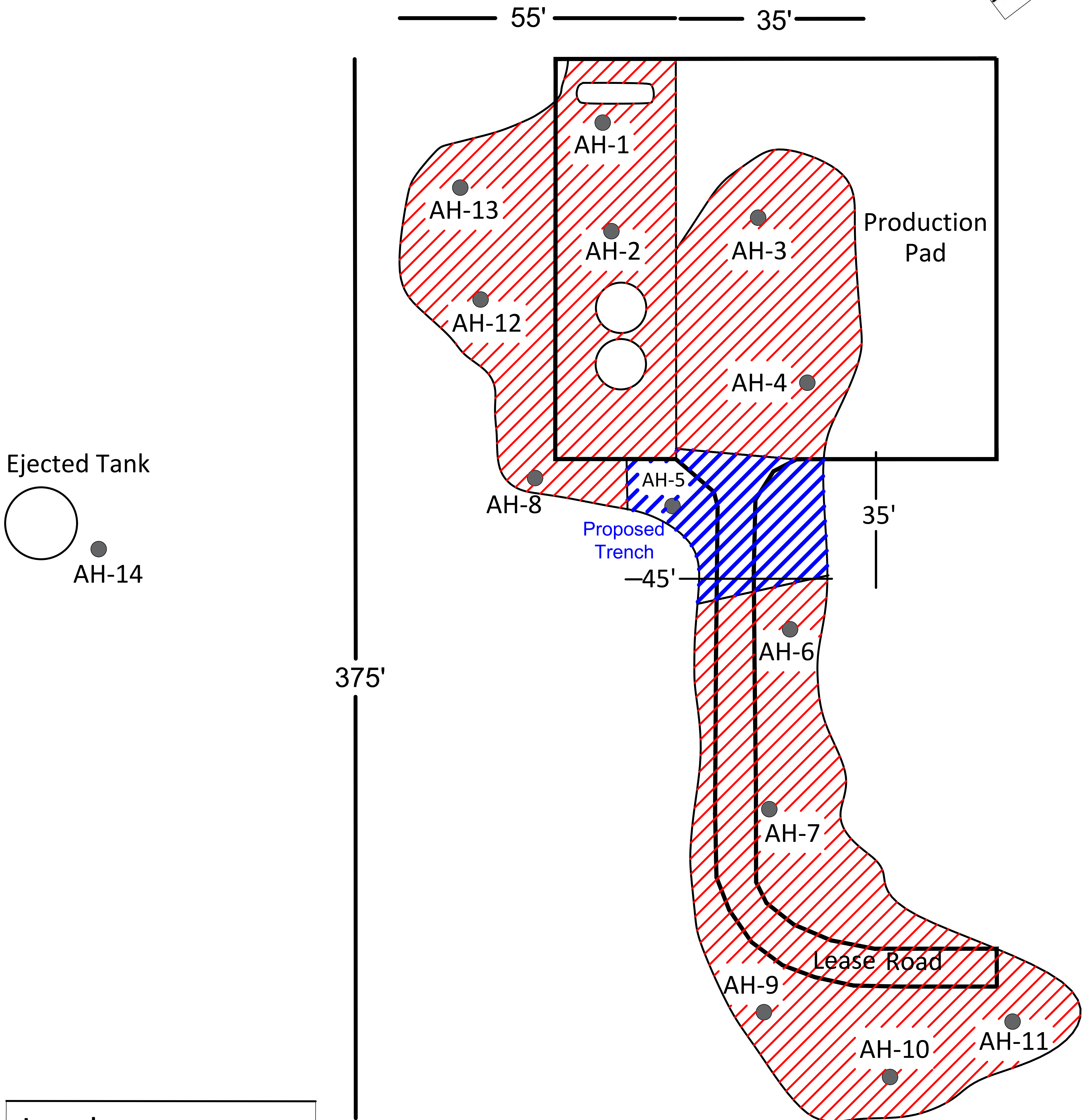
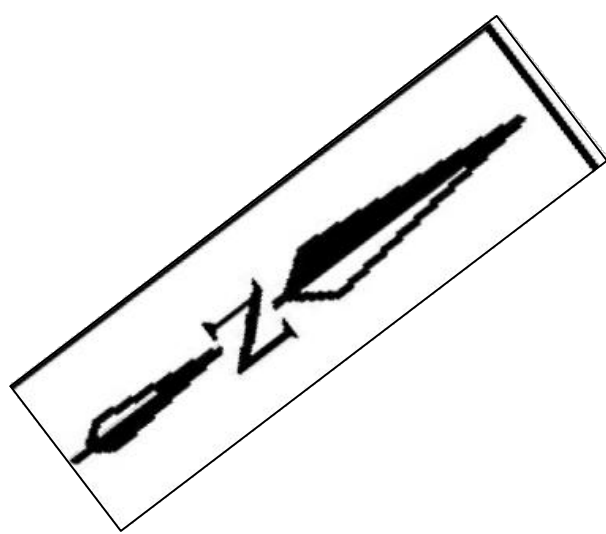
Tank

200 ft

N  
Google earth







**Concho-**  
**COI Empire South Unit #015**  
Eddy County, New Mexico  
32.7637N, -104.1033W



**AMERICAN  
SAFETY  
SERVICES  
INC**

American Safety Services, Inc  
8715 Andrews Hwy  
Odessa, TX 79765  
Phone: (432) 552-7625

**FIGURE 4**  
**Proposed Excavation Areas**



## APPENDIX B

### Table 1



TABLE 1  
Summary of Delineation Sampling Analytical Results  
Concentrations of Benzene, BTEX, TPH & Chloride in Soil  
Concho Operating, LLC  
COI Empire South Unit #15  
Eddy County, New Mexico  
NMOCD REF: #2RP-3894



SAMPLE LOCATION	SAMPLE DEPTH (bgs)	SAMPLE DATE	SOIL STATUS	8021B					8015M			300.0
				BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYLBENZENE (mg/Kg)	XYLENES (mg/Kg)	TOTAL BTEX (mg/Kg)	GRO (mg/Kg)	DRO (mg/Kg)	Total TPH (mg/Kg)	CHLORIDE (mg/Kg)
NMOCD - Guidelines for Remediation of Leaks, Spills and Releases				10	NE	NE	NE	50	NE	NE	5,000	600
Vertical Delineation Sampling												
AH-1	0'-1'	9/21/2016	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<50.0	242	242	144
AH-1	1'-1.5'	9/21/2016	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	128	128	32.0
AH-1	2'-2.5'	9/21/2016	In-Situ	-	-	-	-	-	-	-	-	16.0
AH-2	0'-1'	9/21/2016	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	25.8	25.8	48.0
AH-2	1'-1.5'	9/21/2016	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	23.1	23.1	32.0
AH-2	2'-2.5'	9/21/2016	In-Situ	-	-	-	-	-	-	-	-	32.0
AH-3	0'-1'	9/21/2016	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	68.6	68.6	128
AH-3	1'-1.5'	9/21/2016	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	<10.0	192
AH-3	2'-2.5'	9/21/2016	In-Situ	-	-	-	-	-	-	-	-	304
AH-4	0'-1'	9/21/2016	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	35.8	35.8	<16.0
AH-4	1'-1.5'	9/21/2016	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	<10.0	<16.0
AH-4	2'-2.5'	9/21/2016	In-Situ	-	-	-	-	-	-	-	-	<16.0
AH-4	3'-3.5'	9/21/2016	In-Situ	-	-	-	-	-	-	-	-	<16.0
AH-5	0'-1'	9/21/2016	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	16.9	16.9	960
AH-5	1'-1.5'	9/21/2016	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	<10.0	752
AH-5	2'-2.5'	9/21/2016	In-Situ	-	-	-	-	-	-	-	-	736
AH-5	3'-3.5'	9/21/2016	In-Situ	-	-	-	-	-	-	-	-	864
AH-6	0'-1'	9/21/2016	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	18.7	18.7	16.0
AH-6	1'-1.5'	9/21/2016	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	<10.0	16.0
AH-6	2'-2.5'	9/21/2016	In-Situ	-	-	-	-	-	-	-	-	16.0
AH-6	3'-3.5'	9/21/2016	In-Situ	-	-	-	-	-	-	-	-	<16.0
AH-7	0'-1'	9/21/2016	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	34.2	34.2	128
AH-7	1'-1.5'	9/21/2016	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	<10.0	16.0
AH-7	2'-2.5'	9/21/2016	In-Situ	-	-	-	-	-	-	-	-	16.0

mg/Kg - milligrams per Kilogram

— = Not Established

Proposed Excavation Depth

Concentrations in **BOLD** exceed the NMOCD Guidelines

TABLE 1  
Summary of Delineation Sampling Analytical Results  
Concentrations of Benzene, BTEX, TPH & Chloride in Soil  
Concho Operating, LLC  
COI Empire South Unit #15  
Eddy County, New Mexico  
NMOCD REF: #2RP-3894



SAMPLE LOCATION	SAMPLE DEPTH (bgs)	SAMPLE DATE	SOIL STATUS	8021B					8015M			300.0
				BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYLBENZENE (mg/Kg)	XYLENES (mg/Kg)	TOTAL BTEX (mg/Kg)	GRO (mg/Kg)	DRO (mg/Kg)	Total TPH (mg/Kg)	CHLORIDE (mg/Kg)
NMOCD - Guidelines for Remediation of Leaks, Spills and Releases				10	NE	NE	NE	50	NE	NE	5,000	600
Vertical Delineation Sampling												
AH-8	0'-1'	9/21/2016	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	<10.0	<16.0
AH-8	1'-1.5'	9/21/2016	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	<10.0	48.0
AH-8	2'-2.5'	9/21/2016	In-Situ	-	-	-	-	-	-	-	-	32.0
AH-9	0'-1'	9/21/2016	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	27.5	27.5	<16.0
AH-9	1'-1.5'	9/21/2016	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	<10.0	<16.0
AH-9	2'-2.5'	9/21/2016	In-Situ	-	-	-	-	-	-	-	-	<16.0
AH-10	0'-1'	9/21/2016	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	717	717	<16.0
AH-10	1'-1.5'	9/21/2016	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	59.5	59.5	16.0
AH-10	2'-2.5'	9/21/2016	In-Situ	-	-	-	-	-	-	-	-	32.0
AH-11	0'-1'	9/21/2016	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	115	115	<16.0
AH-11	1'-1.5'	9/21/2016	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	17.5	17.5	16.0
AH-11	2'-2.5'	9/21/2016	In-Situ	-	-	-	-	-	-	-	-	<16.0
AH-12	0'-1'	9/21/2016	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	20.4	20.4	<16.0
AH-12	1'-1.5'	9/21/2016	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	<10.0	<16.0
AH-12	2'-2.5'	9/21/2016	In-Situ	-	-	-	-	-	-	-	-	<16.0
AH-13	0'-1'	9/21/2016	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	<10.0	32.0
AH-13	1'-1.5'	9/21/2016	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	<10.0	<16.0
AH-13	2'-2.5'	9/21/2016	In-Situ	-	-	-	-	-	-	-	-	<16.0
AH-14	0'-1'	9/21/2016	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	<10.0	<16.0
AH-14	1'-1.5'	9/21/2016	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	<10.0	<16.0

mg/Kg - milligrams per Kilogram

— = Not Established

Proposed Excavation Depth

Concentrations in **BOLD** exceed the NMOCD Guidelines



## APPENDIX C

### Laboratory Analysis

September 28, 2016

DAKOTA NEEL

COG OPERATING

P. O. BOX 1630

ARTESIA, NM 88210

RE: EMPIRE SOUTH UNIT #15

Enclosed are the results of analyses for samples received by the laboratory on 09/21/16 15:00.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-16-8. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/ga/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/ga/lab_accred_certif.html).

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Total Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Cardinal Laboratories is accredited through the State of New Mexico Environment Department for:

Method SM 9223-B	Total Coliform and E. coli (Colilert MMO-MUG)
Method EPA 524.2	Regulated VOCs and Total Trihalomethanes (TTHM)
Method EPA 552.2	Total Haloacetic Acids (HAA-5)

Accreditation applies to public drinking water matrices for State of Colorado and New Mexico.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Celey D. Keene

Lab Director/Quality Manager



### Analytical Results For:

COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210

Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONE

Reported:  
28-Sep-16 11:12

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
AH-1 (0-1')	H602120-01	Soil	21-Sep-16 00:00	21-Sep-16 15:00
AH-1 (1-1.5')	H602120-02	Soil	21-Sep-16 00:00	21-Sep-16 15:00
AH-1 (2-2.5')	H602120-03	Soil	21-Sep-16 00:00	21-Sep-16 15:00
AH-2 (0-1')	H602120-04	Soil	21-Sep-16 00:00	21-Sep-16 15:00
AH-2 (1-1.5')	H602120-05	Soil	21-Sep-16 00:00	21-Sep-16 15:00
AH-2 (2-2.5')	H602120-06	Soil	21-Sep-16 00:00	21-Sep-16 15:00
AH-3 (0-1')	H602120-07	Soil	21-Sep-16 00:00	21-Sep-16 15:00
AH-3 (1-1.5')	H602120-08	Soil	21-Sep-16 00:00	21-Sep-16 15:00
AH-3 (2-2.5')	H602120-09	Soil	21-Sep-16 00:00	21-Sep-16 15:00
AH-4 (0-1')	H602120-10	Soil	21-Sep-16 00:00	21-Sep-16 15:00
AH-4 (1-1.5')	H602120-11	Soil	21-Sep-16 00:00	21-Sep-16 15:00
AH-4 (2-2.5')	H602120-12	Soil	21-Sep-16 00:00	21-Sep-16 15:00
AH-4 (3-3.5')	H602120-13	Soil	21-Sep-16 00:00	21-Sep-16 15:00
AH-5 (0-1')	H602120-14	Soil	21-Sep-16 00:00	21-Sep-16 15:00
AH-5 (1-1.5')	H602120-15	Soil	21-Sep-16 00:00	21-Sep-16 15:00
AH-5 (2-2.5')	H602120-16	Soil	21-Sep-16 00:00	21-Sep-16 15:00
AH-5 (3-3.5')	H602120-17	Soil	21-Sep-16 00:00	21-Sep-16 15:00
AH-6 (0-1')	H602120-18	Soil	21-Sep-16 00:00	21-Sep-16 15:00
AH-6 (1-1.5')	H602120-19	Soil	21-Sep-16 00:00	21-Sep-16 15:00
AH-6 (2-2.5')	H602120-20	Soil	21-Sep-16 00:00	21-Sep-16 15:00
AH-6 (3-3.5')	H602120-21	Soil	21-Sep-16 00:00	21-Sep-16 15:00
AH-7 (0-1')	H602120-22	Soil	21-Sep-16 00:00	21-Sep-16 15:00
AH-7 (1-1.5')	H602120-23	Soil	21-Sep-16 00:00	21-Sep-16 15:00
AH-7 (2-2.5')	H602120-24	Soil	21-Sep-16 00:00	21-Sep-16 15:00
AH-8 (0-1')	H602120-25	Soil	21-Sep-16 00:00	21-Sep-16 15:00
AH-8 (1-1.5')	H602120-26	Soil	21-Sep-16 00:00	21-Sep-16 15:00
AH-8 (2-2.5')	H602120-27	Soil	21-Sep-16 00:00	21-Sep-16 15:00

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONEReported:  
28-Sep-16 11:12

AH-9 (0-1')	H602120-28	Soil	21-Sep-16 00:00	21-Sep-16 15:00
AH-9 (1-1.5')	H602120-29	Soil	21-Sep-16 00:00	21-Sep-16 15:00
AH-9 (2-2.5')	H602120-30	Soil	21-Sep-16 00:00	21-Sep-16 15:00
AH-10 (0-1')	H602120-31	Soil	21-Sep-16 00:00	21-Sep-16 15:00
AH-10 (1-1.5')	H602120-32	Soil	21-Sep-16 00:00	21-Sep-16 15:00
AH-10 (2-2.5')	H602120-33	Soil	21-Sep-16 00:00	21-Sep-16 15:00
AH-11 (0-1')	H602120-34	Soil	21-Sep-16 00:00	21-Sep-16 15:00
AH-11 (1-1.5')	H602120-35	Soil	21-Sep-16 00:00	21-Sep-16 15:00
AH-11 (2-2.5')	H602120-36	Soil	21-Sep-16 00:00	21-Sep-16 15:00
AH-12 (0-1')	H602120-37	Soil	21-Sep-16 00:00	21-Sep-16 15:00
AH-12 (1-1.5')	H602120-38	Soil	21-Sep-16 00:00	21-Sep-16 15:00
AH-12 (2-2.5')	H602120-39	Soil	21-Sep-16 00:00	21-Sep-16 15:00
AH-13 (0-1')	H602120-40	Soil	21-Sep-16 00:00	21-Sep-16 15:00
AH-13 (1-1.5')	H602120-41	Soil	21-Sep-16 00:00	21-Sep-16 15:00
AH-13 (2-2.5')	H602120-42	Soil	21-Sep-16 00:00	21-Sep-16 15:00
AH-14 (0-1')	H602120-43	Soil	21-Sep-16 00:00	21-Sep-16 15:00
AH-14 (1-1.5')	H602120-44	Soil	21-Sep-16 00:00	21-Sep-16 15:00

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

### Analytical Results For:

COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210

Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONE

Reported:  
28-Sep-16 11:12

### AH-1 (0-1') H602120-01 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	-----------------	-------	----------	-------	---------	----------	--------	-------

### Cardinal Laboratories

#### Inorganic Compounds

Chloride	144		16.0	mg/kg	4	6092306	AC	23-Sep-16	4500-Cl-B	
----------	-----	--	------	-------	---	---------	----	-----------	-----------	--

#### Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	6092301	MS	23-Sep-16	8021B	
Toluene*	<0.050		0.050	mg/kg	50	6092301	MS	23-Sep-16	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	6092301	MS	23-Sep-16	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	6092301	MS	23-Sep-16	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	6092301	MS	23-Sep-16	8021B	

Surrogate: 4-Bromofluorobenzene (PID)			96.7 %		73.6-140	6092301	MS	23-Sep-16	8021B	
---------------------------------------	--	--	--------	--	----------	---------	----	-----------	-------	--

#### Petroleum Hydrocarbons by GC FID

GRO C6-C10	<50.0		50.0	mg/kg	5	6092201	MS	22-Sep-16	8015B	
DRO >C10-C28	242		50.0	mg/kg	5	6092201	MS	22-Sep-16	8015B	

Surrogate: 1-Chlorooctane			70.0 %		35-147	6092201	MS	22-Sep-16	8015B	
---------------------------	--	--	--------	--	--------	---------	----	-----------	-------	--

Surrogate: 1-Chlorooctadecane			101 %		28-171	6092201	MS	22-Sep-16	8015B	
-------------------------------	--	--	-------	--	--------	---------	----	-----------	-------	--

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

### Analytical Results For:

COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210

Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONE

Reported:  
28-Sep-16 11:12

### AH-1 (1-1.5') H602120-02 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	-----------------	-------	----------	-------	---------	----------	--------	-------

### Cardinal Laboratories

#### Inorganic Compounds

Chloride	32.0		16.0	mg/kg	4	6092306	AC	23-Sep-16	4500-Cl-B	
----------	------	--	------	-------	---	---------	----	-----------	-----------	--

#### Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	6092301	MS	23-Sep-16	8021B	
Toluene*	<0.050		0.050	mg/kg	50	6092301	MS	23-Sep-16	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	6092301	MS	23-Sep-16	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	6092301	MS	23-Sep-16	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	6092301	MS	23-Sep-16	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			96.4 %	73.6-140		6092301	MS	23-Sep-16	8021B	

#### Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	6092201	MS	22-Sep-16	8015B	
DRO >C10-C28	128		10.0	mg/kg	1	6092201	MS	22-Sep-16	8015B	
Surrogate: 1-Chlorooctane			84.6 %	35-147		6092201	MS	22-Sep-16	8015B	
Surrogate: 1-Chlorooctadecane			101 %	28-171		6092201	MS	22-Sep-16	8015B	

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager



**Analytical Results For:**COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONEReported:  
28-Sep-16 11:12**AH-1 (2-2.5')  
H602120-03 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	--------------------	-------	----------	-------	---------	----------	--------	-------

**Cardinal Laboratories****Inorganic Compounds**

<b>Chloride</b>	<b>16.0</b>		16.0	mg/kg	4	6092306	AC	23-Sep-16	4500-Cl-B	
-----------------	-------------	--	------	-------	---	---------	----	-----------	-----------	--

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

### Analytical Results For:

COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210

Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONE

Reported:  
28-Sep-16 11:12

### AH-2 (0-1') H602120-04 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	-----------------	-------	----------	-------	---------	----------	--------	-------

#### Cardinal Laboratories

#### Inorganic Compounds

Chloride	48.0		16.0	mg/kg	4	6092306	AC	23-Sep-16	4500-Cl-B	
----------	------	--	------	-------	---	---------	----	-----------	-----------	--

#### Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	6092302	MS	23-Sep-16	8021B	
Toluene*	<0.050		0.050	mg/kg	50	6092302	MS	23-Sep-16	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	6092302	MS	23-Sep-16	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	6092302	MS	23-Sep-16	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	6092302	MS	23-Sep-16	8021B	

Surrogate: 4-Bromofluorobenzene (PID)			98.2 %		73.6-140	6092302	MS	23-Sep-16	8021B	
---------------------------------------	--	--	--------	--	----------	---------	----	-----------	-------	--

#### Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	6092201	MS	22-Sep-16	8015B	
DRO >C10-C28	25.8		10.0	mg/kg	1	6092201	MS	22-Sep-16	8015B	

Surrogate: 1-Chlorooctane			86.0 %		35-147	6092201	MS	22-Sep-16	8015B	
---------------------------	--	--	--------	--	--------	---------	----	-----------	-------	--

Surrogate: 1-Chlorooctadecane			99.9 %		28-171	6092201	MS	22-Sep-16	8015B	
-------------------------------	--	--	--------	--	--------	---------	----	-----------	-------	--

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

### Analytical Results For:

COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210

Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONE

Reported:  
28-Sep-16 11:12

### AH-2 (1-1.5') H602120-05 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	-----------------	-------	----------	-------	---------	----------	--------	-------

### Cardinal Laboratories

#### Inorganic Compounds

Chloride	32.0		16.0	mg/kg	4	6092306	AC	23-Sep-16	4500-Cl-B	
----------	------	--	------	-------	---	---------	----	-----------	-----------	--

#### Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	6092302	MS	23-Sep-16	8021B	
Toluene*	<0.050		0.050	mg/kg	50	6092302	MS	23-Sep-16	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	6092302	MS	23-Sep-16	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	6092302	MS	23-Sep-16	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	6092302	MS	23-Sep-16	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			97.1 %	73.6-140		6092302	MS	23-Sep-16	8021B	

#### Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	6092202	MS	22-Sep-16	8015B	
DRO >C10-C28	23.1		10.0	mg/kg	1	6092202	MS	22-Sep-16	8015B	
Surrogate: 1-Chlorooctane			83.6 %	35-147		6092202	MS	22-Sep-16	8015B	
Surrogate: 1-Chlorooctadecane			93.5 %	28-171		6092202	MS	22-Sep-16	8015B	

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONEReported:  
28-Sep-16 11:12**AH-2 (2-2.5')  
H602120-06 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	--------------------	-------	----------	-------	---------	----------	--------	-------

**Cardinal Laboratories****Inorganic Compounds**

Chloride	32.0		16.0	mg/kg	4	6092306	AC	23-Sep-16	4500-Cl-B	
----------	------	--	------	-------	---	---------	----	-----------	-----------	--

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager



### Analytical Results For:

COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210

Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONE

Reported:  
28-Sep-16 11:12

### AH-3 (0-1') H602120-07 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	-----------------	-------	----------	-------	---------	----------	--------	-------

### Cardinal Laboratories

#### Inorganic Compounds

Chloride	128		16.0	mg/kg	4	6092306	AC	23-Sep-16	4500-Cl-B	
----------	-----	--	------	-------	---	---------	----	-----------	-----------	--

#### Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	6092602	MS	27-Sep-16	8021B	
Toluene*	<0.050		0.050	mg/kg	50	6092602	MS	27-Sep-16	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	6092602	MS	27-Sep-16	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	6092602	MS	27-Sep-16	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	6092602	MS	27-Sep-16	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			98.0 %		73.6-140	6092602	MS	27-Sep-16	8021B	

#### Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	6092705	MS	27-Sep-16	8015B	
DRO >C10-C28	68.6		10.0	mg/kg	1	6092705	MS	27-Sep-16	8015B	
Surrogate: 1-Chlorooctane			81.1 %		35-147	6092705	MS	27-Sep-16	8015B	
Surrogate: 1-Chlorooctadecane			96.7 %		28-171	6092705	MS	27-Sep-16	8015B	

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

### Analytical Results For:

COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210

Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONE

Reported:  
28-Sep-16 11:12

### AH-3 (1-1.5') H602120-08 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	-----------------	-------	----------	-------	---------	----------	--------	-------

### Cardinal Laboratories

#### Inorganic Compounds

Chloride	192		16.0	mg/kg	4	6092306	AC	23-Sep-16	4500-Cl-B	
----------	-----	--	------	-------	---	---------	----	-----------	-----------	--

#### Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	6092602	MS	27-Sep-16	8021B	
Toluene*	<0.050		0.050	mg/kg	50	6092602	MS	27-Sep-16	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	6092602	MS	27-Sep-16	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	6092602	MS	27-Sep-16	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	6092602	MS	27-Sep-16	8021B	

Surrogate: 4-Bromofluorobenzene (PID) 97.8 % 73.6-140 6092602 MS 27-Sep-16 8021B

#### Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	6092705	MS	27-Sep-16	8015B	
DRO >C10-C28	<10.0		10.0	mg/kg	1	6092705	MS	27-Sep-16	8015B	

Surrogate: 1-Chlorooctane 88.0 % 35-147 6092705 MS 27-Sep-16 8015B

Surrogate: 1-Chlorooctadecane 106 % 28-171 6092705 MS 27-Sep-16 8015B

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONEReported:  
28-Sep-16 11:12**AH-3 (2-2.5')  
H602120-09 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	--------------------	-------	----------	-------	---------	----------	--------	-------

**Cardinal Laboratories****Inorganic Compounds**

<b>Chloride</b>	<b>304</b>		16.0	mg/kg	4	6092306	AC	23-Sep-16	4500-Cl-B	
-----------------	------------	--	------	-------	---	---------	----	-----------	-----------	--

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

### Analytical Results For:

COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210

Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONE

Reported:  
28-Sep-16 11:12

### AH-4 (0-1') H602120-10 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	-----------------	-------	----------	-------	---------	----------	--------	-------

### Cardinal Laboratories

#### Inorganic Compounds

Chloride	<16.0		16.0	mg/kg	4	6092306	AC	23-Sep-16	4500-Cl-B	
----------	-------	--	------	-------	---	---------	----	-----------	-----------	--

#### Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	6092302	MS	23-Sep-16	8021B	
Toluene*	<0.050		0.050	mg/kg	50	6092302	MS	23-Sep-16	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	6092302	MS	23-Sep-16	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	6092302	MS	23-Sep-16	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	6092302	MS	23-Sep-16	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			97.7 %	73.6-140		6092302	MS	23-Sep-16	8021B	

#### Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	6092202	MS	23-Sep-16	8015B	
DRO >C10-C28	35.8		10.0	mg/kg	1	6092202	MS	23-Sep-16	8015B	
Surrogate: 1-Chlorooctane			86.9 %	35-147		6092202	MS	23-Sep-16	8015B	
Surrogate: 1-Chlorooctadecane			95.7 %	28-171		6092202	MS	23-Sep-16	8015B	

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

### Analytical Results For:

COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210

Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONE

Reported:  
28-Sep-16 11:12

### AH-4 (1-1.5') H602120-11 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	-----------------	-------	----------	-------	---------	----------	--------	-------

### Cardinal Laboratories

#### Inorganic Compounds

Chloride	<16.0		16.0	mg/kg	4	6092306	AC	23-Sep-16	4500-Cl-B	
----------	-------	--	------	-------	---	---------	----	-----------	-----------	--

#### Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	6092302	MS	23-Sep-16	8021B	
Toluene*	<0.050		0.050	mg/kg	50	6092302	MS	23-Sep-16	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	6092302	MS	23-Sep-16	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	6092302	MS	23-Sep-16	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	6092302	MS	23-Sep-16	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			98.2 %	73.6-140		6092302	MS	23-Sep-16	8021B	

#### Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	6092202	MS	23-Sep-16	8015B	
DRO >C10-C28	<10.0		10.0	mg/kg	1	6092202	MS	23-Sep-16	8015B	
Surrogate: 1-Chlorooctane			87.1 %	35-147		6092202	MS	23-Sep-16	8015B	
Surrogate: 1-Chlorooctadecane			94.5 %	28-171		6092202	MS	23-Sep-16	8015B	

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONEReported:  
28-Sep-16 11:12**AH-4 (2-2.5')  
H602120-12 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	--------------------	-------	----------	-------	---------	----------	--------	-------

**Cardinal Laboratories****Inorganic Compounds**

Chloride	<16.0		16.0	mg/kg	4	6092306	AC	23-Sep-16	4500-Cl-B	
----------	-------	--	------	-------	---	---------	----	-----------	-----------	--

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager



**Analytical Results For:**COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONEReported:  
28-Sep-16 11:12**AH-4 (3-3.5')  
H602120-13 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	--------------------	-------	----------	-------	---------	----------	--------	-------

**Cardinal Laboratories****Inorganic Compounds**

Chloride	<16.0		16.0	mg/kg	4	6092306	AC	23-Sep-16	4500-Cl-B	
----------	-------	--	------	-------	---	---------	----	-----------	-----------	--

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

### Analytical Results For:

COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210

Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONE

Reported:  
28-Sep-16 11:12

### AH-5 (0-1') H602120-14 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	-----------------	-------	----------	-------	---------	----------	--------	-------

### Cardinal Laboratories

#### Inorganic Compounds

Chloride	960		16.0	mg/kg	4	6092306	AC	23-Sep-16	4500-Cl-B	
----------	-----	--	------	-------	---	---------	----	-----------	-----------	--

#### Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	6092302	MS	23-Sep-16	8021B	
Toluene*	<0.050		0.050	mg/kg	50	6092302	MS	23-Sep-16	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	6092302	MS	23-Sep-16	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	6092302	MS	23-Sep-16	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	6092302	MS	23-Sep-16	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			94.7 %		73.6-140	6092302	MS	23-Sep-16	8021B	

#### Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	6092202	MS	23-Sep-16	8015B	
DRO >C10-C28	16.9		10.0	mg/kg	1	6092202	MS	23-Sep-16	8015B	
Surrogate: 1-Chlorooctane			87.2 %		35-147	6092202	MS	23-Sep-16	8015B	
Surrogate: 1-Chlorooctadecane			102 %		28-171	6092202	MS	23-Sep-16	8015B	

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

### Analytical Results For:

COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210

Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONE

Reported:  
28-Sep-16 11:12

### AH-5 (1-1.5') H602120-15 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	-----------------	-------	----------	-------	---------	----------	--------	-------

#### Cardinal Laboratories

#### Inorganic Compounds

Chloride	752		16.0	mg/kg	4	6092306	AC	23-Sep-16	4500-Cl-B	
----------	-----	--	------	-------	---	---------	----	-----------	-----------	--

#### Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	6092302	MS	23-Sep-16	8021B	
Toluene*	<0.050		0.050	mg/kg	50	6092302	MS	23-Sep-16	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	6092302	MS	23-Sep-16	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	6092302	MS	23-Sep-16	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	6092302	MS	23-Sep-16	8021B	

Surrogate: 4-Bromofluorobenzene (PID) 96.8 % 73.6-140 6092302 MS 23-Sep-16 8021B

#### Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	6092202	MS	23-Sep-16	8015B	
DRO >C10-C28	<10.0		10.0	mg/kg	1	6092202	MS	23-Sep-16	8015B	

Surrogate: 1-Chlorooctane 85.2 % 35-147 6092202 MS 23-Sep-16 8015B

Surrogate: 1-Chlorooctadecane 93.5 % 28-171 6092202 MS 23-Sep-16 8015B

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONEReported:  
28-Sep-16 11:12**AH-5 (2-2.5')  
H602120-16 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	--------------------	-------	----------	-------	---------	----------	--------	-------

**Cardinal Laboratories****Inorganic Compounds**

<b>Chloride</b>	<b>736</b>		16.0	mg/kg	4	6092307	AC	26-Sep-16	4500-Cl-B	
-----------------	------------	--	------	-------	---	---------	----	-----------	-----------	--

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONEReported:  
28-Sep-16 11:12**AH-5 (3-3.5')  
H602120-17 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	--------------------	-------	----------	-------	---------	----------	--------	-------

**Cardinal Laboratories****Inorganic Compounds**

<b>Chloride</b>	<b>864</b>		16.0	mg/kg	4	6092307	AC	26-Sep-16	4500-Cl-B	
-----------------	------------	--	------	-------	---	---------	----	-----------	-----------	--

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

### Analytical Results For:

COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210

Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONE

Reported:  
28-Sep-16 11:12

### AH-6 (0-1') H602120-18 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	-----------------	-------	----------	-------	---------	----------	--------	-------

### Cardinal Laboratories

#### Inorganic Compounds

Chloride	16.0		16.0	mg/kg	4	6092307	AC	26-Sep-16	4500-Cl-B	
----------	------	--	------	-------	---	---------	----	-----------	-----------	--

#### Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	6092302	MS	23-Sep-16	8021B	
Toluene*	<0.050		0.050	mg/kg	50	6092302	MS	23-Sep-16	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	6092302	MS	23-Sep-16	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	6092302	MS	23-Sep-16	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	6092302	MS	23-Sep-16	8021B	

Surrogate: 4-Bromofluorobenzene (PID) 95.7 % 73.6-140 6092302 MS 23-Sep-16 8021B

#### Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	6092202	MS	23-Sep-16	8015B	
DRO >C10-C28	18.7		10.0	mg/kg	1	6092202	MS	23-Sep-16	8015B	

Surrogate: 1-Chlorooctane 80.4 % 35-147 6092202 MS 23-Sep-16 8015B

Surrogate: 1-Chlorooctadecane 89.2 % 28-171 6092202 MS 23-Sep-16 8015B

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager



### Analytical Results For:

COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210

Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONE

Reported:  
28-Sep-16 11:12

### AH-6 (1-1.5') H602120-19 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	-----------------	-------	----------	-------	---------	----------	--------	-------

### Cardinal Laboratories

#### Inorganic Compounds

Chloride	16.0		16.0	mg/kg	4	6092307	AC	26-Sep-16	4500-Cl-B	
----------	------	--	------	-------	---	---------	----	-----------	-----------	--

#### Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	6092302	MS	23-Sep-16	8021B	
Toluene*	<0.050		0.050	mg/kg	50	6092302	MS	23-Sep-16	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	6092302	MS	23-Sep-16	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	6092302	MS	23-Sep-16	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	6092302	MS	23-Sep-16	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			97.3 %		73.6-140	6092302	MS	23-Sep-16	8021B	

#### Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	6092202	MS	23-Sep-16	8015B	
DRO >C10-C28	<10.0		10.0	mg/kg	1	6092202	MS	23-Sep-16	8015B	
Surrogate: 1-Chlorooctane			84.6 %		35-147	6092202	MS	23-Sep-16	8015B	
Surrogate: 1-Chlorooctadecane			94.2 %		28-171	6092202	MS	23-Sep-16	8015B	

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONEReported:  
28-Sep-16 11:12**AH-6 (2-2.5')  
H602120-20 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	--------------------	-------	----------	-------	---------	----------	--------	-------

**Cardinal Laboratories****Inorganic Compounds**

<b>Chloride</b>	<b>16.0</b>		16.0	mg/kg	4	6092307	AC	26-Sep-16	4500-Cl-B	
-----------------	-------------	--	------	-------	---	---------	----	-----------	-----------	--

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONEReported:  
28-Sep-16 11:12**AH-6 (3-3.5')  
H602120-21 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	--------------------	-------	----------	-------	---------	----------	--------	-------

**Cardinal Laboratories****Inorganic Compounds**

Chloride	<16.0		16.0	mg/kg	4	6092307	AC	26-Sep-16	4500-Cl-B	
----------	-------	--	------	-------	---	---------	----	-----------	-----------	--

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

### Analytical Results For:

COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210

Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONE

Reported:  
28-Sep-16 11:12

### AH-7 (0-1') H602120-22 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	-----------------	-------	----------	-------	---------	----------	--------	-------

### Cardinal Laboratories

#### Inorganic Compounds

Chloride	128		16.0	mg/kg	4	6092307	AC	26-Sep-16	4500-Cl-B	
----------	-----	--	------	-------	---	---------	----	-----------	-----------	--

#### Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	6092302	MS	23-Sep-16	8021B	
Toluene*	<0.050		0.050	mg/kg	50	6092302	MS	23-Sep-16	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	6092302	MS	23-Sep-16	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	6092302	MS	23-Sep-16	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	6092302	MS	23-Sep-16	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			96.7 %	73.6-140		6092302	MS	23-Sep-16	8021B	

#### Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	6092202	MS	23-Sep-16	8015B	
DRO >C10-C28	34.2		10.0	mg/kg	1	6092202	MS	23-Sep-16	8015B	
Surrogate: 1-Chlorooctane			86.4 %	35-147		6092202	MS	23-Sep-16	8015B	
Surrogate: 1-Chlorooctadecane			95.2 %	28-171		6092202	MS	23-Sep-16	8015B	

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

### Analytical Results For:

COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210

Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONE

Reported:  
28-Sep-16 11:12

### AH-7 (1-1.5') H602120-23 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	-----------------	-------	----------	-------	---------	----------	--------	-------

### Cardinal Laboratories

#### Inorganic Compounds

Chloride	16.0		16.0	mg/kg	4	6092307	AC	26-Sep-16	4500-Cl-B	
----------	------	--	------	-------	---	---------	----	-----------	-----------	--

#### Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Toluene*	<0.050		0.050	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	6092302	MS	24-Sep-16	8021B	

Surrogate: 4-Bromofluorobenzene (PID) 96.7 % 73.6-140 6092302 MS 24-Sep-16 8021B

#### Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	6092202	MS	23-Sep-16	8015B	
DRO >C10-C28	<10.0		10.0	mg/kg	1	6092202	MS	23-Sep-16	8015B	

Surrogate: 1-Chlorooctane 86.8 % 35-147 6092202 MS 23-Sep-16 8015B

Surrogate: 1-Chlorooctadecane 99.1 % 28-171 6092202 MS 23-Sep-16 8015B

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONEReported:  
28-Sep-16 11:12**AH-7 (2-2.5')  
H602120-24 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	--------------------	-------	----------	-------	---------	----------	--------	-------

**Cardinal Laboratories****Inorganic Compounds**

<b>Chloride</b>	<b>16.0</b>		16.0	mg/kg	4	6092307	AC	26-Sep-16	4500-Cl-B	
-----------------	-------------	--	------	-------	---	---------	----	-----------	-----------	--

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

### Analytical Results For:

COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210

Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONE

Reported:  
28-Sep-16 11:12

### AH-8 (0-1') H602120-25 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	-----------------	-------	----------	-------	---------	----------	--------	-------

### Cardinal Laboratories

#### Inorganic Compounds

Chloride	<16.0		16.0	mg/kg	4	6092307	AC	26-Sep-16	4500-Cl-B	
----------	-------	--	------	-------	---	---------	----	-----------	-----------	--

#### Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Toluene*	<0.050		0.050	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			97.2 %	73.6-140		6092302	MS	24-Sep-16	8021B	

#### Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	6092202	MS	23-Sep-16	8015B	
DRO >C10-C28	<10.0		10.0	mg/kg	1	6092202	MS	23-Sep-16	8015B	
Surrogate: 1-Chlorooctane			81.5 %	35-147		6092202	MS	23-Sep-16	8015B	
Surrogate: 1-Chlorooctadecane			93.3 %	28-171		6092202	MS	23-Sep-16	8015B	

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager



### Analytical Results For:

COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210

Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONE

Reported:  
28-Sep-16 11:12

### AH-8 (1-1.5') H602120-26 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	-----------------	-------	----------	-------	---------	----------	--------	-------

#### Cardinal Laboratories

#### Inorganic Compounds

Chloride	48.0		16.0	mg/kg	4	6092307	AC	26-Sep-16	4500-Cl-B	
----------	------	--	------	-------	---	---------	----	-----------	-----------	--

#### Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Toluene*	<0.050		0.050	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			97.2 %	73.6-140		6092302	MS	24-Sep-16	8021B	

#### Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	6092202	MS	23-Sep-16	8015B	
DRO >C10-C28	<10.0		10.0	mg/kg	1	6092202	MS	23-Sep-16	8015B	
Surrogate: 1-Chlorooctane			69.9 %	35-147		6092202	MS	23-Sep-16	8015B	
Surrogate: 1-Chlorooctadecane			77.2 %	28-171		6092202	MS	23-Sep-16	8015B	

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONEReported:  
28-Sep-16 11:12**AH-8 (2-2.5')  
H602120-27 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	--------------------	-------	----------	-------	---------	----------	--------	-------

**Cardinal Laboratories****Inorganic Compounds**

<b>Chloride</b>	<b>32.0</b>		16.0	mg/kg	4	6092307	AC	26-Sep-16	4500-Cl-B	
-----------------	-------------	--	------	-------	---	---------	----	-----------	-----------	--

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

### Analytical Results For:

COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210

Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONE

Reported:  
28-Sep-16 11:12

### AH-9 (0-1') H602120-28 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	-----------------	-------	----------	-------	---------	----------	--------	-------

### Cardinal Laboratories

#### Inorganic Compounds

Chloride	<16.0		16.0	mg/kg	4	6092307	AC	26-Sep-16	4500-Cl-B	
----------	-------	--	------	-------	---	---------	----	-----------	-----------	--

#### Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Toluene*	<0.050		0.050	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			96.3 %	73.6-140		6092302	MS	24-Sep-16	8021B	

#### Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	6092202	MS	23-Sep-16	8015B	
DRO >C10-C28	27.5		10.0	mg/kg	1	6092202	MS	23-Sep-16	8015B	
Surrogate: 1-Chlorooctane			84.0 %	35-147		6092202	MS	23-Sep-16	8015B	
Surrogate: 1-Chlorooctadecane			94.2 %	28-171		6092202	MS	23-Sep-16	8015B	

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

### Analytical Results For:

COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210

Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONE

Reported:  
28-Sep-16 11:12

### AH-9 (1-1.5') H602120-29 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	-----------------	-------	----------	-------	---------	----------	--------	-------

### Cardinal Laboratories

#### Inorganic Compounds

Chloride	<16.0		16.0	mg/kg	4	6092307	AC	26-Sep-16	4500-Cl-B	
----------	-------	--	------	-------	---	---------	----	-----------	-----------	--

#### Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Toluene*	<0.050		0.050	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	6092302	MS	24-Sep-16	8021B	

Surrogate: 4-Bromofluorobenzene (PID) 96.5 % 73.6-140 6092302 MS 24-Sep-16 8021B

#### Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	6092202	MS	23-Sep-16	8015B	
DRO >C10-C28	<10.0		10.0	mg/kg	1	6092202	MS	23-Sep-16	8015B	

Surrogate: 1-Chlorooctane 85.1 % 35-147 6092202 MS 23-Sep-16 8015B

Surrogate: 1-Chlorooctadecane 95.2 % 28-171 6092202 MS 23-Sep-16 8015B

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONEReported:  
28-Sep-16 11:12**AH-9 (2-2.5')  
H602120-30 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	--------------------	-------	----------	-------	---------	----------	--------	-------

**Cardinal Laboratories****Inorganic Compounds**

Chloride	<16.0		16.0	mg/kg	4	6092307	AC	26-Sep-16	4500-Cl-B	
----------	-------	--	------	-------	---	---------	----	-----------	-----------	--

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

### Analytical Results For:

COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210

Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONE

Reported:  
28-Sep-16 11:12

### AH-10 (0-1') H602120-31 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	-----------------	-------	----------	-------	---------	----------	--------	-------

### Cardinal Laboratories

#### Inorganic Compounds

Chloride	<16.0		16.0	mg/kg	4	6092307	AC	26-Sep-16	4500-Cl-B	
----------	-------	--	------	-------	---	---------	----	-----------	-----------	--

#### Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Toluene*	<0.050		0.050	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			95.9 %		73.6-140	6092302	MS	24-Sep-16	8021B	

#### Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	6092202	MS	23-Sep-16	8015B	
DRO >C10-C28	717		10.0	mg/kg	1	6092202	MS	23-Sep-16	8015B	
Surrogate: 1-Chlorooctane			86.3 %		35-147	6092202	MS	23-Sep-16	8015B	
Surrogate: 1-Chlorooctadecane			111 %		28-171	6092202	MS	23-Sep-16	8015B	

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

### Analytical Results For:

COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210

Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONE

Reported:  
28-Sep-16 11:12

### AH-10 (1-1.5') H602120-32 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	-----------------	-------	----------	-------	---------	----------	--------	-------

### Cardinal Laboratories

#### Inorganic Compounds

Chloride	16.0		16.0	mg/kg	4	6092307	AC	26-Sep-16	4500-Cl-B	
----------	------	--	------	-------	---	---------	----	-----------	-----------	--

#### Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Toluene*	<0.050		0.050	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	6092302	MS	24-Sep-16	8021B	

Surrogate: 4-Bromofluorobenzene (PID) 96.6 % 73.6-140 6092302 MS 24-Sep-16 8021B

#### Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	6092202	MS	23-Sep-16	8015B	
DRO >C10-C28	59.5		10.0	mg/kg	1	6092202	MS	23-Sep-16	8015B	

Surrogate: 1-Chlorooctane 78.9 % 35-147 6092202 MS 23-Sep-16 8015B

Surrogate: 1-Chlorooctadecane 95.1 % 28-171 6092202 MS 23-Sep-16 8015B

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONEReported:  
28-Sep-16 11:12**AH-10 (2-2.5')****H602120-33 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	--------------------	-------	----------	-------	---------	----------	--------	-------

**Cardinal Laboratories****Inorganic Compounds**

<b>Chloride</b>	<b>32.0</b>		16.0	mg/kg	4	6092307	AC	26-Sep-16	4500-Cl-B	
-----------------	-------------	--	------	-------	---	---------	----	-----------	-----------	--

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager



### Analytical Results For:

COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210

Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONE

Reported:  
28-Sep-16 11:12

### AH-11 (0-1') H602120-34 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	-----------------	-------	----------	-------	---------	----------	--------	-------

### Cardinal Laboratories

#### Inorganic Compounds

Chloride	<16.0		16.0	mg/kg	4	6092307	AC	26-Sep-16	4500-Cl-B	
----------	-------	--	------	-------	---	---------	----	-----------	-----------	--

#### Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Toluene*	<0.050		0.050	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			96.0 %	73.6-140		6092302	MS	24-Sep-16	8021B	

#### Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	6092202	MS	23-Sep-16	8015B	
DRO >C10-C28	115		10.0	mg/kg	1	6092202	MS	23-Sep-16	8015B	
Surrogate: 1-Chlorooctane			79.1 %	35-147		6092202	MS	23-Sep-16	8015B	
Surrogate: 1-Chlorooctadecane			98.6 %	28-171		6092202	MS	23-Sep-16	8015B	

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

### Analytical Results For:

COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210

Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONE

Reported:  
28-Sep-16 11:12

### AH-11 (1-1.5') H602120-35 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	-----------------	-------	----------	-------	---------	----------	--------	-------

### Cardinal Laboratories

#### Inorganic Compounds

Chloride	16.0		16.0	mg/kg	4	6092307	AC	26-Sep-16	4500-Cl-B	
----------	------	--	------	-------	---	---------	----	-----------	-----------	--

#### Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Toluene*	<0.050		0.050	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			96.9 %	73.6-140		6092302	MS	24-Sep-16	8021B	

#### Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	6092202	MS	23-Sep-16	8015B	
DRO >C10-C28	17.5		10.0	mg/kg	1	6092202	MS	23-Sep-16	8015B	
Surrogate: 1-Chlorooctane			79.5 %	35-147		6092202	MS	23-Sep-16	8015B	
Surrogate: 1-Chlorooctadecane			94.3 %	28-171		6092202	MS	23-Sep-16	8015B	

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONEReported:  
28-Sep-16 11:12**AH-11 (2-2.5')****H602120-36 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	--------------------	-------	----------	-------	---------	----------	--------	-------

**Cardinal Laboratories****Inorganic Compounds**

Chloride	<16.0		16.0	mg/kg	4	6092308	AC	26-Sep-16	4500-Cl-B	
----------	-------	--	------	-------	---	---------	----	-----------	-----------	--

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

### Analytical Results For:

COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210

Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONE

Reported:  
28-Sep-16 11:12

### AH-12 (0-1') H602120-37 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	-----------------	-------	----------	-------	---------	----------	--------	-------

### Cardinal Laboratories

#### Inorganic Compounds

Chloride	<16.0		16.0	mg/kg	4	6092308	AC	26-Sep-16	4500-Cl-B	
----------	-------	--	------	-------	---	---------	----	-----------	-----------	--

#### Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Toluene*	<0.050		0.050	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	6092302	MS	24-Sep-16	8021B	

Surrogate: 4-Bromofluorobenzene (PID)			97.5 %		73.6-140	6092302	MS	24-Sep-16	8021B	
---------------------------------------	--	--	--------	--	----------	---------	----	-----------	-------	--

#### Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	6092202	MS	23-Sep-16	8015B	
DRO >C10-C28	20.4		10.0	mg/kg	1	6092202	MS	23-Sep-16	8015B	

Surrogate: 1-Chlorooctane			80.4 %		35-147	6092202	MS	23-Sep-16	8015B	
---------------------------	--	--	--------	--	--------	---------	----	-----------	-------	--

Surrogate: 1-Chlorooctadecane			93.4 %		28-171	6092202	MS	23-Sep-16	8015B	
-------------------------------	--	--	--------	--	--------	---------	----	-----------	-------	--

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

### Analytical Results For:

COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210

Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONE

Reported:  
28-Sep-16 11:12

### AH-12 (1-1.5') H602120-38 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	-----------------	-------	----------	-------	---------	----------	--------	-------

#### Cardinal Laboratories

#### Inorganic Compounds

Chloride	<16.0		16.0	mg/kg	4	6092308	AC	26-Sep-16	4500-Cl-B	
----------	-------	--	------	-------	---	---------	----	-----------	-----------	--

#### Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Toluene*	<0.050		0.050	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	6092302	MS	24-Sep-16	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	6092302	MS	24-Sep-16	8021B	

Surrogate: 4-Bromofluorobenzene (PID)			95.9 %		73.6-140	6092302	MS	24-Sep-16	8021B	
---------------------------------------	--	--	--------	--	----------	---------	----	-----------	-------	--

#### Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	6092202	MS	23-Sep-16	8015B	
DRO >C10-C28	<10.0		10.0	mg/kg	1	6092202	MS	23-Sep-16	8015B	

Surrogate: 1-Chlorooctane			80.1 %		35-147	6092202	MS	23-Sep-16	8015B	
---------------------------	--	--	--------	--	--------	---------	----	-----------	-------	--

Surrogate: 1-Chlorooctadecane			95.2 %		28-171	6092202	MS	23-Sep-16	8015B	
-------------------------------	--	--	--------	--	--------	---------	----	-----------	-------	--

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONEReported:  
28-Sep-16 11:12**AH-12 (2-2.5')****H602120-39 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	--------------------	-------	----------	-------	---------	----------	--------	-------

**Cardinal Laboratories****Inorganic Compounds**

Chloride	<16.0		16.0	mg/kg	4	6092308	AC	26-Sep-16	4500-Cl-B	
----------	-------	--	------	-------	---	---------	----	-----------	-----------	--

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

### Analytical Results For:

COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210

Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONE

Reported:  
28-Sep-16 11:12

### AH-13 (0-1') H602120-40 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	-----------------	-------	----------	-------	---------	----------	--------	-------

### Cardinal Laboratories

#### Inorganic Compounds

Chloride	32.0		16.0	mg/kg	4	6092308	AC	26-Sep-16	4500-Cl-B	
----------	------	--	------	-------	---	---------	----	-----------	-----------	--

#### Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	6092303	MS	24-Sep-16	8021B	
Toluene*	<0.050		0.050	mg/kg	50	6092303	MS	24-Sep-16	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	6092303	MS	24-Sep-16	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	6092303	MS	24-Sep-16	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	6092303	MS	24-Sep-16	8021B	

Surrogate: 4-Bromofluorobenzene (PID) 96.8 % 73.6-140 6092303 MS 24-Sep-16 8021B

#### Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	6092202	MS	23-Sep-16	8015B	
DRO >C10-C28	<10.0		10.0	mg/kg	1	6092202	MS	23-Sep-16	8015B	

Surrogate: 1-Chlorooctane 83.8 % 35-147 6092202 MS 23-Sep-16 8015B

Surrogate: 1-Chlorooctadecane 99.8 % 28-171 6092202 MS 23-Sep-16 8015B

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

### Analytical Results For:

COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210

Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONE

Reported:  
28-Sep-16 11:12

### AH-13 (1-1.5') H602120-41 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	-----------------	-------	----------	-------	---------	----------	--------	-------

### Cardinal Laboratories

#### Inorganic Compounds

Chloride	<16.0		16.0	mg/kg	4	6092308	AC	26-Sep-16	4500-Cl-B	
----------	-------	--	------	-------	---	---------	----	-----------	-----------	--

#### Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	6092303	MS	24-Sep-16	8021B	
Toluene*	<0.050		0.050	mg/kg	50	6092303	MS	24-Sep-16	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	6092303	MS	24-Sep-16	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	6092303	MS	24-Sep-16	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	6092303	MS	24-Sep-16	8021B	

Surrogate: 4-Bromofluorobenzene (PID)			97.3 %		73.6-140	6092303	MS	24-Sep-16	8021B	
---------------------------------------	--	--	--------	--	----------	---------	----	-----------	-------	--

#### Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	6092203	MS	23-Sep-16	8015B	
DRO >C10-C28	<10.0		10.0	mg/kg	1	6092203	MS	23-Sep-16	8015B	

Surrogate: 1-Chlorooctane			72.2 %		35-147	6092203	MS	23-Sep-16	8015B	
---------------------------	--	--	--------	--	--------	---------	----	-----------	-------	--

Surrogate: 1-Chlorooctadecane			86.4 %		28-171	6092203	MS	23-Sep-16	8015B	
-------------------------------	--	--	--------	--	--------	---------	----	-----------	-------	--

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager



**Analytical Results For:**COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONEReported:  
28-Sep-16 11:12**AH-13 (2-2.5')****H602120-42 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	--------------------	-------	----------	-------	---------	----------	--------	-------

**Cardinal Laboratories****Inorganic Compounds**

Chloride	<16.0		16.0	mg/kg	4	6092308	AC	26-Sep-16	4500-Cl-B	
----------	-------	--	------	-------	---	---------	----	-----------	-----------	--

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

### Analytical Results For:

COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210

Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONE

Reported:  
28-Sep-16 11:12

### AH-14 (0-1') H602120-43 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	-----------------	-------	----------	-------	---------	----------	--------	-------

### Cardinal Laboratories

#### Inorganic Compounds

Chloride	<16.0		16.0	mg/kg	4	6092308	AC	26-Sep-16	4500-Cl-B	
----------	-------	--	------	-------	---	---------	----	-----------	-----------	--

#### Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	6092303	MS	24-Sep-16	8021B	
Toluene*	<0.050		0.050	mg/kg	50	6092303	MS	24-Sep-16	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	6092303	MS	24-Sep-16	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	6092303	MS	24-Sep-16	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	6092303	MS	24-Sep-16	8021B	

Surrogate: 4-Bromofluorobenzene (PID) 97.8 % 73.6-140 6092303 MS 24-Sep-16 8021B

#### Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	6092203	MS	23-Sep-16	8015B	
DRO >C10-C28	<10.0		10.0	mg/kg	1	6092203	MS	23-Sep-16	8015B	

Surrogate: 1-Chlorooctane 74.2 % 35-147 6092203 MS 23-Sep-16 8015B

Surrogate: 1-Chlorooctadecane 86.5 % 28-171 6092203 MS 23-Sep-16 8015B

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

### Analytical Results For:

COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210

Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONE

Reported:  
28-Sep-16 11:12

### AH-14 (1-1.5')

### H602120-44 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	-----------------	-------	----------	-------	---------	----------	--------	-------

### Cardinal Laboratories

#### Inorganic Compounds

Chloride	<16.0		16.0	mg/kg	4	6092308	AC	26-Sep-16	4500-Cl-B	
----------	-------	--	------	-------	---	---------	----	-----------	-----------	--

#### Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	6092303	MS	24-Sep-16	8021B	
Toluene*	<0.050		0.050	mg/kg	50	6092303	MS	24-Sep-16	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	6092303	MS	24-Sep-16	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	6092303	MS	24-Sep-16	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	6092303	MS	24-Sep-16	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			97.1 %	73.6-140		6092303	MS	24-Sep-16	8021B	

#### Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	6092203	MS	23-Sep-16	8015B	
DRO >C10-C28	<10.0		10.0	mg/kg	1	6092203	MS	23-Sep-16	8015B	
Surrogate: 1-Chlorooctane			77.0 %	35-147		6092203	MS	23-Sep-16	8015B	
Surrogate: 1-Chlorooctadecane			88.9 %	28-171		6092203	MS	23-Sep-16	8015B	

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

### Analytical Results For:

COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210

Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONE

Reported:  
28-Sep-16 11:12

### Inorganic Compounds - Quality Control

#### Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 6092306 - 1:4 DI Water</b>										
<b>Blank (6092306-BLK1)</b>				Prepared & Analyzed: 23-Sep-16						
Chloride	ND	16.0	mg/kg							
<b>LCS (6092306-BS1)</b>				Prepared & Analyzed: 23-Sep-16						
Chloride	432	16.0	mg/kg	400		108	80-120			
<b>LCS Dup (6092306-BSD1)</b>				Prepared & Analyzed: 23-Sep-16						
Chloride	464	16.0	mg/kg	400		116	80-120	7.14	20	
<b>Duplicate (6092306-DUP1)</b>				<b>Source: H602103-02</b>		Prepared & Analyzed: 23-Sep-16				
Chloride	336	16.0	mg/kg		352			4.65	20	
<b>Matrix Spike (6092306-MS1)</b>				<b>Source: H602103-02</b>		Prepared & Analyzed: 23-Sep-16				
Chloride	752	16.0	mg/kg	400	352	100	80-120			
<b>Batch 6092307 - 1:4 DI Water</b>										
<b>Blank (6092307-BLK1)</b>				Prepared: 23-Sep-16 Analyzed: 26-Sep-16						
Chloride	ND	16.0	mg/kg							
<b>LCS (6092307-BS1)</b>				Prepared: 23-Sep-16 Analyzed: 26-Sep-16						
Chloride	448	16.0	mg/kg	400		112	80-120			
<b>LCS Dup (6092307-BSD1)</b>				Prepared: 23-Sep-16 Analyzed: 26-Sep-16						
Chloride	448	16.0	mg/kg	400		112	80-120	0.00	20	
<b>Duplicate (6092307-DUP1)</b>				<b>Source: H602120-16</b>		Prepared: 23-Sep-16 Analyzed: 26-Sep-16				
Chloride	768	16.0	mg/kg		736			4.26	20	

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

### Analytical Results For:

COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210

Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONE

Reported:  
28-Sep-16 11:12

### Inorganic Compounds - Quality Control

#### Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	--------------------	-------	----------------	------------------	------	----------------	-----	--------------	-------

#### Batch 6092307 - 1:4 DI Water

**Matrix Spike (6092307-MS1)** Source: H602120-16 Prepared: 23-Sep-16 Analyzed: 26-Sep-16

Chloride	1170	16.0	mg/kg	400	736	108	80-120			
----------	------	------	-------	-----	-----	-----	--------	--	--	--

#### Batch 6092308 - 1:4 DI Water

**Blank (6092308-BLK1)** Prepared: 23-Sep-16 Analyzed: 26-Sep-16

Chloride	ND	16.0	mg/kg							
----------	----	------	-------	--	--	--	--	--	--	--

**LCS (6092308-BS1)** Prepared: 23-Sep-16 Analyzed: 26-Sep-16

Chloride	432	16.0	mg/kg	400		108	80-120			
----------	-----	------	-------	-----	--	-----	--------	--	--	--

**LCS Dup (6092308-BSD1)** Prepared: 23-Sep-16 Analyzed: 26-Sep-16

Chloride	432	16.0	mg/kg	400		108	80-120	0.00	20	
----------	-----	------	-------	-----	--	-----	--------	------	----	--

**Duplicate (6092308-DUP1)** Source: H602120-36 Prepared: 23-Sep-16 Analyzed: 26-Sep-16

Chloride	ND	16.0	mg/kg		0.00				20	
----------	----	------	-------	--	------	--	--	--	----	--

**Matrix Spike (6092308-MS1)** Source: H602120-36 Prepared: 23-Sep-16 Analyzed: 26-Sep-16

Chloride	432	16.0	mg/kg	400	0.00	108	80-120			
----------	-----	------	-------	-----	------	-----	--------	--	--	--

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

### Analytical Results For:

COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210

Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONE

Reported:  
28-Sep-16 11:12

### Volatile Organic Compounds by EPA Method 8021 - Quality Control

#### Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

#### Batch 6092301 - Volatiles

##### Blank (6092301-BLK1)

Prepared & Analyzed: 23-Sep-16

Benzene	ND	0.050	mg/kg							
Toluene	ND	0.050	mg/kg							
Ethylbenzene	ND	0.050	mg/kg							
Total Xylenes	ND	0.150	mg/kg							
Total BTEX	ND	0.300	mg/kg							
Surrogate: 4-Bromofluorobenzene (PID)	0.0513		mg/kg	0.0500		103	73.6-140			

##### LCS (6092301-BS1)

Prepared & Analyzed: 23-Sep-16

Benzene	1.78	0.050	mg/kg	2.00		89.0	82.6-122			
Toluene	1.81	0.050	mg/kg	2.00		90.3	72.9-122			
Ethylbenzene	1.72	0.050	mg/kg	2.00		86.1	65.4-131			
Total Xylenes	5.21	0.150	mg/kg	6.00		86.8	73.8-125			
Surrogate: 4-Bromofluorobenzene (PID)	0.0507		mg/kg	0.0500		101	73.6-140			

##### LCS Dup (6092301-BSD1)

Prepared & Analyzed: 23-Sep-16

Benzene	1.79	0.050	mg/kg	2.00		89.7	82.6-122	0.762	8.23	
Toluene	1.82	0.050	mg/kg	2.00		91.1	72.9-122	0.839	8.71	
Ethylbenzene	1.74	0.050	mg/kg	2.00		87.1	65.4-131	1.08	9.46	
Total Xylenes	5.26	0.150	mg/kg	6.00		87.7	73.8-125	1.07	8.66	
Surrogate: 4-Bromofluorobenzene (PID)	0.0495		mg/kg	0.0500		99.0	73.6-140			

##### Matrix Spike (6092301-MS1)

Source: H602100-08


Prepared & Analyzed: 23-Sep-16

Benzene	2.91	0.200	mg/kg	2.00	0.756	108	66.7-126			
Toluene	10.8	0.200	mg/kg	2.00	8.96	89.7	58.1-125			
Ethylbenzene	9.67	0.200	mg/kg	2.00	8.46	60.5	45.6-142			
Total Xylenes	39.5	0.600	mg/kg	6.00	35.6	65.1	52-138			
Surrogate: 4-Bromofluorobenzene (PID)	0.0665		mg/kg	0.0500		133	73.6-140			

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

Page 50 of 65

### Analytical Results For:

COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210

Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONE

Reported:  
28-Sep-16 11:12

### Volatile Organic Compounds by EPA Method 8021 - Quality Control

#### Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

#### Batch 6092301 - Volatiles

Matrix Spike Dup (6092301-MSD1)		Source: H602100-08			Prepared & Analyzed: 23-Sep-16					
Benzene	2.98	0.200	mg/kg	2.00	0.756	111	66.7-126	2.34	12.2	
Toluene	11.1	0.200	mg/kg	2.00	8.96	106	58.1-125	3.02	18.1	
Ethylbenzene	9.98	0.200	mg/kg	2.00	8.46	76.1	45.6-142	3.17	33.4	
Total Xylenes	40.8	0.600	mg/kg	6.00	35.6	86.8	52-138	3.24	36.2	
Surrogate: 4-Bromofluorobenzene (PID)	0.0673		mg/kg	0.0500		135	73.6-140			

#### Batch 6092302 - Volatiles

Blank (6092302-BLK1)		Prepared & Analyzed: 23-Sep-16								
Benzene	ND	0.050	mg/kg							
Toluene	ND	0.050	mg/kg							
Ethylbenzene	ND	0.050	mg/kg							
Total Xylenes	ND	0.150	mg/kg							
Total BTEX	ND	0.300	mg/kg							
Surrogate: 4-Bromofluorobenzene (PID)	ND		mg/kg	0.0500		98.0	73.6-140			

LCS (6092302-BS1)		Prepared & Analyzed: 23-Sep-16								
Benzene	2.22	0.050	mg/kg	2.00		111	82.6-122			
Toluene	2.24	0.050	mg/kg	2.00		112	72.9-122			
Ethylbenzene	2.14	0.050	mg/kg	2.00		107	65.4-131			
Total Xylenes	6.49	0.150	mg/kg	6.00		108	73.8-125			
Surrogate: 4-Bromofluorobenzene (PID)	0.0485		mg/kg	0.0500		97.0	73.6-140			

LCS Dup (6092302-BSD1)		Prepared & Analyzed: 23-Sep-16								
Benzene	2.21	0.050	mg/kg	2.00		110	82.6-122	0.608	8.23	
Toluene	2.25	0.050	mg/kg	2.00		112	72.9-122	0.304	8.71	
Ethylbenzene	2.16	0.050	mg/kg	2.00		108	65.4-131	0.858	9.46	
Total Xylenes	6.54	0.150	mg/kg	6.00		109	73.8-125	0.875	8.66	
Surrogate: 4-Bromofluorobenzene (PID)	0.0496		mg/kg	0.0500		99.3	73.6-140			

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

### Analytical Results For:

COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210

Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONE

Reported:  
28-Sep-16 11:12

### Volatile Organic Compounds by EPA Method 8021 - Quality Control

#### Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	--------------------	-------	----------------	------------------	------	----------------	-----	--------------	-------

#### Batch 6092302 - Volatiles

Matrix Spike (6092302-MS1)		Source: H602120-04			Prepared: 23-Sep-16 Analyzed: 24-Sep-16					
Benzene	1.94	0.050	mg/kg	2.00	ND	97.0	66.7-126			
Toluene	1.98	0.050	mg/kg	2.00	0.017	98.2	58.1-125			
Ethylbenzene	1.90	0.050	mg/kg	2.00	0.021	94.0	45.6-142			
Total Xylenes	5.72	0.150	mg/kg	6.00	0.027	94.9	52-138			
Surrogate: 4-Bromofluorobenzene (PID)	0.0490		mg/kg	0.0500		98.0	73.6-140			

Matrix Spike Dup (6092302-MSD1)		Source: H602120-04			Prepared: 23-Sep-16 Analyzed: 24-Sep-16					
Benzene	1.95	0.050	mg/kg	2.00	ND	97.5	66.7-126	0.463	12.2	
Toluene	1.98	0.050	mg/kg	2.00	0.017	98.2	58.1-125	0.0575	18.1	
Ethylbenzene	1.90	0.050	mg/kg	2.00	0.021	94.0	45.6-142	0.0505	33.4	
Total Xylenes	5.71	0.150	mg/kg	6.00	0.027	94.6	52-138	0.230	36.2	
Surrogate: 4-Bromofluorobenzene (PID)	0.0481		mg/kg	0.0500		96.1	73.6-140			

#### Batch 6092303 - Volatiles

Blank (6092303-BLK1)		Prepared: 23-Sep-16 Analyzed: 24-Sep-16								
Benzene	ND	0.050	mg/kg							
Toluene	ND	0.050	mg/kg							
Ethylbenzene	ND	0.050	mg/kg							
Total Xylenes	ND	0.150	mg/kg							
Total BTEX	ND	0.300	mg/kg							
Surrogate: 4-Bromofluorobenzene (PID)	ND		mg/kg	0.0500		96.2	73.6-140			

LCS (6092303-BS1)		Prepared: 23-Sep-16 Analyzed: 24-Sep-16								
Benzene	1.82	0.050	mg/kg	2.00		91.1	82.6-122			
Toluene	1.84	0.050	mg/kg	2.00		92.1	72.9-122			
Ethylbenzene	1.77	0.050	mg/kg	2.00		88.4	65.4-131			
Total Xylenes	5.32	0.150	mg/kg	6.00		88.7	73.8-125			
Surrogate: 4-Bromofluorobenzene (PID)	0.0487		mg/kg	0.0500		97.3	73.6-140			

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager



### Analytical Results For:

COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210

Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONE

Reported:  
28-Sep-16 11:12

### Volatile Organic Compounds by EPA Method 8021 - Quality Control

#### Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

#### Batch 6092303 - Volatiles

##### LCS Dup (6092303-BSD1)

Prepared: 23-Sep-16 Analyzed: 24-Sep-16

Benzene	1.80	0.050	mg/kg	2.00		90.2	82.6-122	0.992	8.23	
Toluene	1.83	0.050	mg/kg	2.00		91.4	72.9-122	0.714	8.71	
Ethylbenzene	1.75	0.050	mg/kg	2.00		87.6	65.4-131	0.904	9.46	
Total Xylenes	5.27	0.150	mg/kg	6.00		87.8	73.8-125	1.05	8.66	
Surrogate: 4-Bromofluorobenzene (PID)	0.0487		mg/kg	0.0500		97.4	73.6-140			

##### Matrix Spike (6092303-MS1)

Source: H602120-40

Prepared: 23-Sep-16 Analyzed: 24-Sep-16

Benzene	2.20	0.050	mg/kg	2.00	ND	110	66.7-126			
Toluene	2.24	0.050	mg/kg	2.00	0.018	111	58.1-125			
Ethylbenzene	2.15	0.050	mg/kg	2.00	0.021	106	45.6-142			
Total Xylenes	6.51	0.150	mg/kg	6.00	0.036	108	52-138			
Surrogate: 4-Bromofluorobenzene (PID)	0.0494		mg/kg	0.0500		98.8	73.6-140			

##### Matrix Spike Dup (6092303-MSD1)

Source: H602120-40

Prepared: 23-Sep-16 Analyzed: 24-Sep-16

Benzene	2.24	0.050	mg/kg	2.00	ND	112	66.7-126	1.71	12.2	
Toluene	2.27	0.050	mg/kg	2.00	0.018	113	58.1-125	1.53	18.1	
Ethylbenzene	2.17	0.050	mg/kg	2.00	0.021	107	45.6-142	1.06	33.4	
Total Xylenes	6.56	0.150	mg/kg	6.00	0.036	109	52-138	0.773	36.2	
Surrogate: 4-Bromofluorobenzene (PID)	0.0493		mg/kg	0.0500		98.7	73.6-140			

#### Batch 6092602 - Volatiles

##### Blank (6092602-BLK1)

Prepared: 26-Sep-16 Analyzed: 27-Sep-16

Benzene	ND	0.050	mg/kg							
Toluene	ND	0.050	mg/kg							
Ethylbenzene	ND	0.050	mg/kg							
Total Xylenes	ND	0.150	mg/kg							
Total BTEX	ND	0.300	mg/kg							
Surrogate: 4-Bromofluorobenzene (PID)	ND		mg/kg	0.0500		96.5	73.6-140			

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

### Analytical Results For:

COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210

Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONE

Reported:  
28-Sep-16 11:12

### Volatile Organic Compounds by EPA Method 8021 - Quality Control

#### Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

#### Batch 6092602 - Volatiles

##### LCS (6092602-BS1)

Prepared: 26-Sep-16 Analyzed: 27-Sep-16

Benzene	2.31	0.050	mg/kg	2.00		115	82.6-122			
Toluene	2.34	0.050	mg/kg	2.00		117	72.9-122			
Ethylbenzene	2.24	0.050	mg/kg	2.00		112	65.4-131			
Total Xylenes	6.74	0.150	mg/kg	6.00		112	73.8-125			
Surrogate: 4-Bromofluorobenzene (PID)	0.0488		mg/kg	0.0500		97.5	73.6-140			

##### LCS Dup (6092602-BS1)

Prepared: 26-Sep-16 Analyzed: 27-Sep-16

Benzene	2.31	0.050	mg/kg	2.00		116	82.6-122	0.272	8.23	
Toluene	2.34	0.050	mg/kg	2.00		117	72.9-122	0.0127	8.71	
Ethylbenzene	2.26	0.050	mg/kg	2.00		113	65.4-131	0.841	9.46	
Total Xylenes	6.79	0.150	mg/kg	6.00		113	73.8-125	0.682	8.66	
Surrogate: 4-Bromofluorobenzene (PID)	0.0484		mg/kg	0.0500		96.9	73.6-140			

##### Matrix Spike (6092602-MS1)

Source: H602134-12

Prepared: 26-Sep-16 Analyzed: 27-Sep-16

Benzene	2.19	0.050	mg/kg	2.00	ND	109	66.7-126			
Toluene	2.22	0.050	mg/kg	2.00	0.012	111	58.1-125			
Ethylbenzene	2.14	0.050	mg/kg	2.00	0.024	106	45.6-142			
Total Xylenes	6.42	0.150	mg/kg	6.00	0.022	107	52-138			
Surrogate: 4-Bromofluorobenzene (PID)	0.0496		mg/kg	0.0500		99.2	73.6-140			

##### Matrix Spike Dup (6092602-MS1)

Source: H602134-12

Prepared: 26-Sep-16 Analyzed: 28-Sep-16

Benzene	2.23	0.050	mg/kg	2.00	ND	111	66.7-126	1.73	12.2	
Toluene	2.27	0.050	mg/kg	2.00	0.012	113	58.1-125	2.21	18.1	
Ethylbenzene	2.20	0.050	mg/kg	2.00	0.024	109	45.6-142	2.49	33.4	
Total Xylenes	6.60	0.150	mg/kg	6.00	0.022	110	52-138	2.76	36.2	
Surrogate: 4-Bromofluorobenzene (PID)	0.0494		mg/kg	0.0500		98.8	73.6-140			

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

### Analytical Results For:

COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210

Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONE

Reported:  
28-Sep-16 11:12

### Petroleum Hydrocarbons by GC FID - Quality Control

#### Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

#### Batch 6092201 - General Prep - Organics

##### Blank (6092201-BLK1)

Prepared & Analyzed: 22-Sep-16

GRO C6-C10	ND	10.0	mg/kg							
DRO >C10-C28	ND	10.0	mg/kg							
EXT DRO >C28-C35	ND	10.0	mg/kg							
Total TPH C6-C28	ND	10.0	mg/kg							
Surrogate: 1-Chlorooctane	41.9		mg/kg	50.0		83.8	35-147			
Surrogate: 1-Chlorooctadecane	48.0		mg/kg	50.0		96.1	28-171			

##### LCS (6092201-BS1)

Prepared & Analyzed: 22-Sep-16

GRO C6-C10	195	10.0	mg/kg	200		97.5	76.7-115			
DRO >C10-C28	203	10.0	mg/kg	200		102	78.3-122			
Total TPH C6-C28	398	10.0	mg/kg	400		99.5	79.8-117			
Surrogate: 1-Chlorooctane	50.7		mg/kg	50.0		101	35-147			
Surrogate: 1-Chlorooctadecane	55.6		mg/kg	50.0		111	28-171			

##### LCS Dup (6092201-BS1)

Prepared & Analyzed: 22-Sep-16

GRO C6-C10	194	10.0	mg/kg	200		96.8	76.7-115	0.733	9.42	
DRO >C10-C28	201	10.0	mg/kg	200		100	78.3-122	1.22	13.2	
Total TPH C6-C28	394	10.0	mg/kg	400		98.6	79.8-117	0.981	10.7	
Surrogate: 1-Chlorooctane	50.3		mg/kg	50.0		101	35-147			
Surrogate: 1-Chlorooctadecane	54.4		mg/kg	50.0		109	28-171			

##### Matrix Spike (6092201-MS1)

Source: H602100-09

Prepared & Analyzed: 22-Sep-16

GRO C6-C10	218	10.0	mg/kg	200	126	45.9	66.4-123			QM-07
DRO >C10-C28	249	10.0	mg/kg	200	141	53.7	67.6-126			QM-07
Total TPH C6-C28	466	10.0	mg/kg	400	267	49.8	60.8-134			QM-07
Surrogate: 1-Chlorooctane	53.7		mg/kg	50.0		107	35-147			
Surrogate: 1-Chlorooctadecane	57.3		mg/kg	50.0		115	28-171			

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

### Analytical Results For:

COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210

Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONE

Reported:  
28-Sep-16 11:12

### Petroleum Hydrocarbons by GC FID - Quality Control

#### Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

#### Batch 6092201 - General Prep - Organics

Matrix Spike Dup (6092201-MSD1)		Source: H602100-09			Prepared & Analyzed: 22-Sep-16					
GRO C6-C10	219	10.0	mg/kg	200	126	46.5	66.4-123	1.34	10.2	QM-07
DRO >C10-C28	252	10.0	mg/kg	200	141	55.3	67.6-126	2.84	11.6	QM-07
Total TPH C6-C28	471	10.0	mg/kg	400	267	50.9	60.8-134	2.15	9.02	QM-07
Surrogate: 1-Chlorooctane	54.0		mg/kg	50.0		108	35-147			
Surrogate: 1-Chlorooctadecane	57.9		mg/kg	50.0		116	28-171			

#### Batch 6092202 - General Prep - Organics

Blank (6092202-BLK1)		Prepared & Analyzed: 22-Sep-16								
GRO C6-C10	ND	10.0	mg/kg							
DRO >C10-C28	ND	10.0	mg/kg							
EXT DRO >C28-C35	ND	10.0	mg/kg							
Total TPH C6-C28	ND	10.0	mg/kg							
Surrogate: 1-Chlorooctane	42.1		mg/kg	50.0		84.2	35-147			
Surrogate: 1-Chlorooctadecane	47.9		mg/kg	50.0		95.8	28-171			

LCS (6092202-BS1)		Prepared & Analyzed: 22-Sep-16								
GRO C6-C10	194	10.0	mg/kg	200		97.1	76.7-115			
DRO >C10-C28	200	10.0	mg/kg	200		99.8	78.3-122			
Total TPH C6-C28	394	10.0	mg/kg	400		98.4	79.8-117			
Surrogate: 1-Chlorooctane	50.3		mg/kg	50.0		101	35-147			
Surrogate: 1-Chlorooctadecane	53.3		mg/kg	50.0		107	28-171			

LCS Dup (6092202-BSD1)		Prepared & Analyzed: 22-Sep-16								
GRO C6-C10	194	10.0	mg/kg	200		97.2	76.7-115	0.115	9.42	
DRO >C10-C28	199	10.0	mg/kg	200		99.3	78.3-122	0.479	13.2	
Total TPH C6-C28	393	10.0	mg/kg	400		98.3	79.8-117	0.185	10.7	
Surrogate: 1-Chlorooctane	50.5		mg/kg	50.0		101	35-147			
Surrogate: 1-Chlorooctadecane	52.4		mg/kg	50.0		105	28-171			

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

### Analytical Results For:

COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210

Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONE

Reported:  
28-Sep-16 11:12

### Petroleum Hydrocarbons by GC FID - Quality Control

#### Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	--------------------	-------	----------------	------------------	------	----------------	-----	--------------	-------

#### Batch 6092202 - General Prep - Organics

Matrix Spike (6092202-MS1)		Source: H602120-05			Prepared: 22-Sep-16 Analyzed: 23-Sep-16					
GRO C6-C10	190	10.0	mg/kg	200	ND	94.9	66.4-123			
DRO >C10-C28	231	10.0	mg/kg	200	23.1	104	67.6-126			
Total TPH C6-C28	421	10.0	mg/kg	400	24.2	99.1	60.8-134			
Surrogate: 1-Chlorooctane	52.4		mg/kg	50.0		105	35-147			
Surrogate: 1-Chlorooctadecane	56.4		mg/kg	50.0		113	28-171			

Matrix Spike Dup (6092202-MSD1)		Source: H602120-05			Prepared: 22-Sep-16 Analyzed: 23-Sep-16					
GRO C6-C10	192	10.0	mg/kg	200	ND	95.8	66.4-123	0.995	10.2	
DRO >C10-C28	237	10.0	mg/kg	200	23.1	107	67.6-126	3.07	11.6	
Total TPH C6-C28	429	10.0	mg/kg	400	24.2	101	60.8-134	2.09	9.02	
Surrogate: 1-Chlorooctane	52.7		mg/kg	50.0		105	35-147			
Surrogate: 1-Chlorooctadecane	57.6		mg/kg	50.0		115	28-171			

#### Batch 6092203 - General Prep - Organics

Blank (6092203-BLK1)		Prepared: 22-Sep-16 Analyzed: 23-Sep-16								
GRO C6-C10	ND	10.0	mg/kg							
DRO >C10-C28	ND	10.0	mg/kg							
EXT DRO >C28-C35	ND	10.0	mg/kg							
Total TPH C6-C28	ND	10.0	mg/kg							
Surrogate: 1-Chlorooctane	37.2		mg/kg	50.0		74.5	35-147			
Surrogate: 1-Chlorooctadecane	44.1		mg/kg	50.0		88.3	28-171			

LCS (6092203-BS1)		Prepared & Analyzed: 22-Sep-16								
GRO C6-C10	178	10.0	mg/kg	200		89.2	76.7-115			
DRO >C10-C28	176	10.0	mg/kg	200		88.0	78.3-122			
Total TPH C6-C28	354	10.0	mg/kg	400		88.6	79.8-117			
Surrogate: 1-Chlorooctane	43.7		mg/kg	50.0		87.4	35-147			
Surrogate: 1-Chlorooctadecane	31.5		mg/kg	50.0		63.0	28-171			

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

### Analytical Results For:

COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210

Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONE

Reported:  
28-Sep-16 11:12

### Petroleum Hydrocarbons by GC FID - Quality Control

#### Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

#### Batch 6092203 - General Prep - Organics

##### LCS Dup (6092203-BSD1)

Prepared & Analyzed: 22-Sep-16

GRO C6-C10	193	10.0	mg/kg	200		96.5	76.7-115	7.92	9.42	
DRO >C10-C28	193	10.0	mg/kg	200		96.3	78.3-122	8.92	13.2	
Total TPH C6-C28	386	10.0	mg/kg	400		96.4	79.8-117	8.42	10.7	
Surrogate: 1-Chlorooctane	48.9		mg/kg	50.0		97.8	35-147			
Surrogate: 1-Chlorooctadecane	41.3		mg/kg	50.0		82.6	28-171			

##### Matrix Spike (6092203-MS1)

Source: H602120-41

Prepared: 22-Sep-16 Analyzed: 23-Sep-16

GRO C6-C10	187	10.0	mg/kg	200	ND	93.7	66.4-123			
DRO >C10-C28	183	10.0	mg/kg	200	4.37	89.3	67.6-126			
Total TPH C6-C28	370	10.0	mg/kg	400	5.35	91.3	60.8-134			
Surrogate: 1-Chlorooctane	47.8		mg/kg	50.0		95.7	35-147			
Surrogate: 1-Chlorooctadecane	51.3		mg/kg	50.0		103	28-171			

##### Matrix Spike Dup (6092203-MSD1)

Source: H602120-41

Prepared: 22-Sep-16 Analyzed: 23-Sep-16

GRO C6-C10	189	10.0	mg/kg	200	ND	94.3	66.4-123	0.611	10.2	
DRO >C10-C28	188	10.0	mg/kg	200	4.37	91.6	67.6-126	2.53	11.6	
Total TPH C6-C28	376	10.0	mg/kg	400	5.35	92.7	60.8-134	1.55	9.02	
Surrogate: 1-Chlorooctane	48.4		mg/kg	50.0		96.8	35-147			
Surrogate: 1-Chlorooctadecane	52.8		mg/kg	50.0		106	28-171			

#### Batch 6092705 - General Prep - Organics

##### Blank (6092705-BLK1)

Prepared & Analyzed: 27-Sep-16

GRO C6-C10	ND	10.0	mg/kg							
DRO >C10-C28	ND	10.0	mg/kg							
EXT DRO >C28-C35	ND	10.0	mg/kg							
Total TPH C6-C28	ND	10.0	mg/kg							
Surrogate: 1-Chlorooctane	44.0		mg/kg	50.0		88.0	35-147			
Surrogate: 1-Chlorooctadecane	52.2		mg/kg	50.0		104	28-171			

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

### Analytical Results For:

COG OPERATING  
P. O. BOX 1630  
ARTESIA NM, 88210

Project: EMPIRE SOUTH UNIT #15  
Project Number: NONE GIVEN  
Project Manager: DAKOTA NEEL  
Fax To: NONE

Reported:  
28-Sep-16 11:12

### Petroleum Hydrocarbons by GC FID - Quality Control

#### Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

#### Batch 6092705 - General Prep - Organics

##### LCS (6092705-BS1)

Prepared & Analyzed: 27-Sep-16

GRO C6-C10	203	10.0	mg/kg	200		102	76.7-115			
DRO >C10-C28	202	10.0	mg/kg	200		101	78.3-122			
Total TPH C6-C28	405	10.0	mg/kg	400		101	79.8-117			
Surrogate: 1-Chlorooctane	52.3		mg/kg	50.0		105	35-147			
Surrogate: 1-Chlorooctadecane	53.8		mg/kg	50.0		108	28-171			

##### LCS Dup (6092705-BSD1)

Prepared & Analyzed: 27-Sep-16

GRO C6-C10	207	10.0	mg/kg	200		104	76.7-115	2.03	9.42	
DRO >C10-C28	205	10.0	mg/kg	200		103	78.3-122	1.80	13.2	
Total TPH C6-C28	412	10.0	mg/kg	400		103	79.8-117	1.91	10.7	
Surrogate: 1-Chlorooctane	56.0		mg/kg	50.0		112	35-147			
Surrogate: 1-Chlorooctadecane	57.0		mg/kg	50.0		114	28-171			

##### Matrix Spike (6092705-MS1)

Source: H602120-07

Prepared & Analyzed: 27-Sep-16

GRO C6-C10	178	10.0	mg/kg	200	ND	88.8	66.4-123			
DRO >C10-C28	223	10.0	mg/kg	200	68.6	77.0	67.6-126			
Total TPH C6-C28	400	10.0	mg/kg	400	69.6	82.6	60.8-134			
Surrogate: 1-Chlorooctane	40.0		mg/kg	50.0		79.9	35-147			
Surrogate: 1-Chlorooctadecane	42.5		mg/kg	50.0		85.1	28-171			

##### Matrix Spike Dup (6092705-MSD1)

Source: H602120-07

Prepared & Analyzed: 27-Sep-16

GRO C6-C10	171	10.0	mg/kg	200	ND	85.5	66.4-123	3.74	10.2	
DRO >C10-C28	218	10.0	mg/kg	200	68.6	74.5	67.6-126	3.33	11.6	
Total TPH C6-C28	389	10.0	mg/kg	400	69.6	79.7	60.8-134	3.56	9.02	
Surrogate: 1-Chlorooctane	38.3		mg/kg	50.0		76.7	35-147			
Surrogate: 1-Chlorooctadecane	40.6		mg/kg	50.0		81.1	28-171			

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager



### Notes and Definitions

QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

---

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



---

Celey D. Keene, Lab Director/Quality Manager



# CARDINAL Laboratories

pg 1 of 5

## CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240  
(575) 393-2326 FAX (575) 393-2476

Company Name: <u>COG</u>		P.O. #:		<b>BILL TO</b>																		
Project Manager: <u>Dakota Neel</u>		Company: <u>COG</u>		<b>ANALYSIS REQUEST</b>																		
Address:		Attn: <u>Robert McNeil</u>																				
City:		Address:																				
Phone #:		City: <u>Midland</u>																				
State:		State: <u>TX</u>																				
Zip:		Zip:																				
Project #:		Project Owner:																				
Project Name: <u>Empire South Unit #15</u>		Phone #:																				
Project Location: <u>Edg Co NW</u>		Fax #:																				
Sampler Name: <u>Ryan Rich</u>																						
FOR LAB USE ONLY																						
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX					PRESERV.	SAMPLING												
				GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	ACID/BASE:	ICE / COOL	OTHER :	DATE	TIME	TPH	BTEX	Chloride					
<u>H602120</u>	<u>AH1 (0-1)</u>	<u>C</u>	<u>1</u>	<u>X</u>									<u>9/2/16</u>		<u>X</u>	<u>X</u>	<u>X</u>					
	<u>2 (1-1.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>3 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>AH2 (0-1)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>4 (1-1.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>5 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>AH3 (0-1)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>6 (1-1.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>7 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>AH4 (0-1)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>8 (1-1.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>9 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>AH5 (0-1)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>10 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>AH6 (0-1)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>11 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>12 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>13 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>14 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>15 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>16 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>17 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>18 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>19 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>20 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>21 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>22 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>23 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>24 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>25 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>26 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>27 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>28 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>29 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>30 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>31 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>32 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>33 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>34 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>35 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>36 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>37 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>38 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>39 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>40 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>41 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>42 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>43 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>44 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>45 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>46 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>47 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>48 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>49 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>50 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>51 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>52 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>53 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>54 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>55 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>56 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>57 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>58 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>59 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>60 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>61 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>62 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>63 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>64 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>65 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>66 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>67 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>68 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>69 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>70 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>71 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>72 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>73 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>74 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>75 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>76 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>77 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>78 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>79 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>80 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>81 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>82 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>83 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>84 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>85 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>86 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>87 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>88 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>89 (2-2.5)</u>	<u>C</u>		<u>X</u>											<u>X</u>	<u>X</u>	<u>X</u>					
	<u>90 (2-2.5)</u>	<u>C</u>		<u>X</u>				</														



## CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

gives to (575) 393-2326





CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240  
(575) 393-2326 FAX (575) 393-2476

13 3045

Company Name: <b>(36)</b>		<b>BILL TO</b>		<b>ANALYSIS REQUEST</b>									
Project Manager: <b>Darlene Reed</b>		P.O. #:											
Address:		Company: <b>(06)</b>											
City:		Attn: <b>Robert McNeil</b>											
State:		Address:											
Zip:		City:											
Phone #:		State:											
Fax #:		Zip:											
Project #:		Phone #:											
Project Name: <b>Empire South Unit #15</b>		Fax #:											
Project Location: <b>Edg 7 Co N/A</b>		PRESERV											
Sampler Name: <b>Paula Reile</b>		SAMPLING											
FOR LAB USE ONLY													
Lab I.D.		Sample I.D.											
H602120		A-16 (0-1)											
18-21		(1-1.5)											
19-20		(2-2.5)											
20-21		(1-1.5)											
21-22		(1-1.5)											
22-23		(1-1.5)											
23-24		(1-1.5)											
24-25		(1-1.5)											
25-26		(1-1.5)											
26-27		(1-1.5)											
27-28		(1-1.5)											
28-29		(1-1.5)											
29-30		(1-1.5)											
30-31		(1-1.5)											
31-32		(1-1.5)											
32-33		(1-1.5)											
33-34		(1-1.5)											
34-35		(1-1.5)											
35-36		(1-1.5)											
36-37		(1-1.5)											
37-38		(1-1.5)											
38-39		(1-1.5)											
39-40		(1-1.5)											
40-41		(1-1.5)											
41-42		(1-1.5)											
42-43		(1-1.5)											
43-44		(1-1.5)											
44-45		(1-1.5)											
45-46		(1-1.5)											
46-47		(1-1.5)											
47-48		(1-1.5)											
48-49		(1-1.5)											
49-50		(1-1.5)											
50-51		(1-1.5)											
51-52		(1-1.5)											
52-53		(1-1.5)											
53-54		(1-1.5)											
54-55		(1-1.5)											
55-56		(1-1.5)											
56-57		(1-1.5)											
57-58		(1-1.5)											
58-59		(1-1.5)											
59-60		(1-1.5)											
60-61		(1-1.5)											
61-62		(1-1.5)											
62-63		(1-1.5)											
63-64		(1-1.5)											
64-65		(1-1.5)											
65-66		(1-1.5)											
66-67		(1-1.5)											
67-68		(1-1.5)											
68-69		(1-1.5)											
69-70		(1-1.5)											
70-71		(1-1.5)											
71-72		(1-1.5)											
72-73		(1-1.5)											
73-74		(1-1.5)											
74-75		(1-1.5)											
75-76		(1-1.5)											
76-77		(1-1.5)											
77-78		(1-1.5)											
78-79		(1-1.5)											
79-80		(1-1.5)											
80-81		(1-1.5)											
81-82		(1-1.5)											
82-83		(1-1.5)											
83-84		(1-1.5)											
84-85		(1-1.5)											
85-86		(1-1.5)											
86-87		(1-1.5)											
87-88		(1-1.5)											
88-89		(1-1.5)											
89-90		(1-1.5)											
90-91		(1-1.5)											
91-92		(1-1.5)											
92-93		(1-1.5)											
93-94		(1-1.5)											
94-95		(1-1.5)											
95-96		(1-1.5)											
96-97		(1-1.5)											
97-98		(1-1.5)											
98-99		(1-1.5)											
99-100		(1-1.5)											
100-101		(1-1.5)											
101-102		(1-1.5)											
102-103		(1-1.5)											
103-104		(1-1.5)											
104-105		(1-1.5)											
105-106		(1-1.5)											
106-107		(1-1.5)											
107-108		(1-1.5)											
108-109		(1-1.5)											
109-110		(1-1.5)											
110-111		(1-1.5)											
111-112		(1-1.5)											
112-113		(1-1.5)											
113-114		(1-1.5)											
114-115		(1-1.5)											
115-116		(1-1.5)											
116-117		(1-1.5)											
117-118		(1-1.5)											
118-119		(1-1.5)											
119-120		(1-1.5)											
120-121		(1-1.5)											
121-122		(1-1.5)											
122-123		(1-1.5)											
123-124		(1-1.5)											
124-125		(1-1.5)											
125-126		(1-1.5)											
126-127		(1-1.5)											
127-128		(1-1.5)											
128-129		(1-1.5)											
129-130		(1-1.5)											
130-131		(1-1.5)											
131-132		(1-1.5)											
132-133		(1-1.5)											
133-134		(1-1.5)											
134-135		(1-1.5)											
135-136		(1-1.5)											
136-137		(1-1.5)											
137-138		(1-1.5)											
138-139		(1-1.5)											
139-140		(1-1.5)											
140-141		(1-1.5)											
141-142		(1-1.5)											
142-143		(1-1.5)											
143-144		(1-1.5)											
144-145		(1-1.5)											
145-146		(1-1.5)											
146-147		(1-1.5)											
147-148		(1-1.5)											
148-149		(1-1.5)											
149-150		(1-1.5)											
150-151		(1-1.5)											
151-152		(1-1.5)											
152-153		(1-1.5)											
153-154		(1-1.5)											
154-155		(1-1.5)											
155-156		(1-1.5)											
156-157		(1-1.5)											
157-158		(1-1.5)											
158-159		(1-1.5)											
159-160		(1-1.5)											
160-161		(1-1.5)											
161-162		(1-1.5)											
162-163		(1-1.5)											
163-164		(1-1.5)											
164-165		(1-1.5)											
165-166		(1-1.5)											
166-167		(1-1.5)											
167-168		(1-1.5)											
168-169		(1-1.5)											
169-170		(1-1.5)											
170-171		(1-1.5)											
171-172		(1-1.5)											
172-173		(1-1.5)											
173-174		(1-1.5)											
174-175		(1-1.5)											
175-176		(1-1.5)											
176-177		(1-1.5)											
177-178		(1-1.5)											
178-179		(1-1.5)											
179-180		(1-1.5)											
180-181		(1-1.5)											
181-182		(1-1.5)											
182-183		(1-1.5)											
183-184		(1-1.5)											
184-185		(1-1.5)											
185-186		(1-1.5)											
186-187		(1-1.5)											
187-188		(1-1.5)											
188-189		(1-1.5)											
189-190		(1-1.5)											
190-191		(1-1.5)											
191-192		(1-1.5)											
192-193		(1-1.5)											
193-194		(1-1.5)											
194-195		(1-1.5)											
195-196		(1-1.5)											
196-197		(1-1.5)											
197-198		(1-1.5)											
198-199		(1-1.5)											
199-200		(1-1.5)											
200-201		(1-1.5)											
201-202		(1-1.5)											
202-203		(1-1.5)											
203-204		(1-1.5)											
204-205		(1-1.5)											
205-206		(1-1.5)											
206-207		(1-1.5)											
207-208		(1-1.5)											
208-209		(1-1.5)											
209-210		(1-1.5)											
210-211		(1-1.5)											
211-212		(1-1.5)											
212-213		(1-1.5)											
213-214		(1-1.5)											
214-215		(1-1.5)											
215-216		(1-1.5)											
216-217		(1-1.5)											
217-218		(1-1.5)											
218-219		(1-1.5)											
219-220		(1-1.5)											
220-221		(1-1.5)											
221-222		(1-1.5)											
222-223		(1-1.5)											
223-224		(1-1.5)											
224-225		(1-1.5)											
225-226		(1-1.5)											
226-227		(1-1.5)											
227-228		(1-1.5)											
228-229		(1-1.5)											
229-230		(1-1.5)											
230-231		(1-1.5)											
231-232		(1-1.5)											
232-233		(1-1.5)											
233-234		(1-1.5)											
234-235		(1-1.5)											
235-236		(1-1.5)											
236-237		(1-1.5)											
237-238		(1-1.5)											
238-239		(1-1.5)											
239-240		(1-1.5)											
240-241		(1-1.5)											
241-242		(1-1.5)											
242-243		(1-1.5)											
243-244		(1-1.5)											
244-245		(1-1.5)											
245-246		(1-1.5)											
246-247		(1-1.5)											
247-248		(1-1.5)											
248-249		(1-1.5)											
249-250		(1-1.5)											
250-251		(1-1.5)											
251-252		(1-1.5)											
252-253		(1-1.5)											
253-254		(1-1.5)											
254-255		(1-1.5)											
255-256		(1-1.5)											
256-257		(1-1.5)											
257-258		(1-1.5)											
258-259		(1-1.5)											
259-260		(1-1.5)											
260-261		(1-1.5)											
261-262		(1-1.5)											
262-263		(1-1.5)											
263-264		(1-1.5)											
264-265		(1-1.5)											
265-266		(1-1.5)											
266-267		(1-1.5)											
267-268		(1-1.5)											
268-269		(1-1.5)											
269-270		(1-1.5)											
270-271		(1-1.5)											
271-272		(1-1.5)											
272-273		(1-1.5)											
273-274		(1-1.5)											
274-275		(1-1.5)											
275-276		(1-1.5)											
276-277		(1-1.5)											
277-278		(1-1.5)											
278-279		(1-1.5)											
279-280		(1-1.5)											
280-281		(1-1.5)											
281-282		(1-1.5)											
282-283		(1-1.5)											
283-284		(1-1.5)											
284-285		(1-1.5)											
285-286		(1-1.5)											
286-287		(1-1.5)											
287-288		(1-1.5)											
288-289		(1-1.5)											
289-290		(1-1.5)											
290-291		(1-1.5)											
291-292		(1-1.5)											
292-293		(1-1.5)											
293-294		(1-1.5)											
294-295		(1-1.5)											
295-296		(1-1.5)											
296-297		(1-1.5)											
297-298		(1-1.5)											
298-299		(1-1.5)											
299-300		(1-1.5)											
300-301		(1-1.5)											
301-302		(1-1.5)											
302-303		(1-1.5)											
303-304		(1-1.5)											
304-305		(1-1.5)											
305-306		(1-1.5)											
306-307		(1-1.5)											
307-308		(1-1.5)											
308-309		(1-1.5)											
309-310		(1-1.5)											
310-311		(1-1.5)											
311-312		(1-1.5)</											



101 East Marland, Hobbs, NM 88240  
(575) 393-2326 FAX (575) 393-2476

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

PS 4 or 5

BILL TO				ANALYSIS REQUEST													
Company Name: (26)				P.O. #:													
Project Manager: Dwyer, Noel				Company: (OK)													
Address:				Attn: Robert McNeil													
City:				Address:													
State:				City: Madland													
Zip:				State: TX Zip:													
Phone #:				Phone #:													
Fax #:				Fax #:													
Project #:				Project Owner:													
Project Name: Engine South Unit #15				Project Location: Edg Co NW													
Sampler Name: Ryan Reilly																	
FOR LAB USE ONLY																	
Lab I.D.		Sample I.D.		(G)RAB OR (C)OMP.		# CONTAINERS		MATRIX		PRESERV		SAMPLING		DATE		TIME	
HUC0212D		AH 9 (3-1)		C		1		GROUNDWATER						TPH			
28 35		(1-1.5)		C		1		WASTEWATER						BTEX			
29 35		(2-2.5)		C		1		SOIL						Chloride			
30 35		(1-1.5)		C		1		OIL									
31 35		(1-1.5)		C		1		SLUDGE									
32 35		(1-1.5)		C		1		OTHER :									
33 35		(1-1.5)		C		1		ACID/BASE:									
34 35		(1-1.5)		C		1		ICE / COOL									
35 35		(1-1.5)		C		1		OTHER :									
36 35		(1-1.5)		C		1											
37 35		(1-1.5)		C		1											
38 35		(1-1.5)		C		1											
39 35		(1-1.5)		C		1											
40 35		(1-1.5)		C		1											
41 35		(1-1.5)		C		1											
42 35		(1-1.5)		C		1											
43 35		(1-1.5)		C		1											
44 35		(1-1.5)		C		1											
45 35		(1-1.5)		C		1											
46 35		(1-1.5)		C		1											
47 35		(1-1.5)		C		1											
48 35		(1-1.5)		C		1											
49 35		(1-1.5)		C		1											
50 35		(1-1.5)		C		1											
51 35		(1-1.5)		C		1											
52 35		(1-1.5)		C		1											
53 35		(1-1.5)		C		1											
54 35		(1-1.5)		C		1											
55 35		(1-1.5)		C		1											
56 35		(1-1.5)		C		1											
57 35		(1-1.5)		C		1											
58 35		(1-1.5)		C		1											
59 35		(1-1.5)		C		1											
60 35		(1-1.5)		C		1											
61 35		(1-1.5)		C		1											
62 35		(1-1.5)		C		1											
63 35		(1-1.5)		C		1											
64 35		(1-1.5)		C		1											
65 35		(1-1.5)		C		1											
66 35		(1-1.5)		C		1											
67 35		(1-1.5)		C		1											
68 35		(1-1.5)		C		1											
69 35		(1-1.5)		C		1											
70 35		(1-1.5)		C		1											
71 35		(1-1.5)		C		1											
72 35		(1-1.5)		C		1											
73 35		(1-1.5)		C		1											
74 35		(1-1.5)		C		1											
75 35		(1-1.5)		C		1											
76 35		(1-1.5)		C		1											
77 35		(1-1.5)		C		1											
78 35		(1-1.5)		C		1											
79 35		(1-1.5)		C		1											
80 35		(1-1.5)		C		1											
81 35		(1-1.5)		C		1											
82 35		(1-1.5)		C		1											
83 35		(1-1.5)		C		1											
84 35		(1-1.5)		C		1											
85 35		(1-1.5)		C		1											
86 35		(1-1.5)		C		1											
87 35		(1-1.5)		C		1											
88 35		(1-1.5)		C		1											
89 35		(1-1.5)		C		1											
90 35		(1-1.5)		C		1											
91 35		(1-1.5)		C		1											
92 35		(1-1.5)		C		1											
93 35		(1-1.5)		C		1											
94 35		(1-1.5)		C		1											
95 35		(1-1.5)		C		1											
96 35		(1-1.5)		C		1											
97 35		(1-1.5)		C		1											
98 35		(1-1.5)		C		1											
99 35		(1-1.5)		C		1											
100 35		(1-1.5)		C		1											
101 35		(1-1.5)		C		1											
102 35		(1-1.5)		C		1											
103 35		(1-1.5)		C		1											
104 35		(1-1.5)		C		1											
105 35		(1-1.5)		C		1											
106 35		(1-1.5)		C		1											
107 35		(1-1.5)		C		1											
108 35		(1-1.5)		C		1											
109 35		(1-1.5)		C		1											
110 35		(1-1.5)		C		1											
111 35		(1-1.5)		C		1											
112 35		(1-1.5)		C		1											
113 35		(1-1.5)		C		1											
114 35		(1-1.5)		C		1											
115 35		(1-1.5)		C		1											
116 35		(1-1.5)		C		1											
117 35		(1-1.5)		C		1											
118 35		(1-1.5)		C		1											
119 35		(1-1.5)		C		1											
120 35		(1-1.5)		C		1											
121 35		(1-1.5)		C		1											
122 35		(1-1.5)		C		1											
123 35		(1-1.5)		C		1											
124 35		(1-1.5)		C		1											
125 35		(1-1.5)		C		1											
126 35		(1-1.5)		C		1											
127 35		(1-1.5)		C		1											
128 35		(1-1.5)		C		1											
129 35		(1-1.5)		C		1											
130 35		(1-1.5)		C		1											
131 35		(1-1.5)		C		1											
132 35		(1-1.5)		C		1											
133 35		(1-1.5)		C		1											
134 35		(1-1.5)		C		1											
135 35		(1-1.5)		C		1											
136 35		(1-1.5)		C		1											
137 35		(1-1.5)		C		1											
138 35		(1-1.5)		C		1											
139 35		(1-1.5)		C		1											
140 35		(1-1.5)		C		1											
141 35		(1-1.5)		C		1											
142 35		(1-1.5)		C		1											
143 35		(1-1.5)		C		1											
144 35		(1-1.5)		C		1											
145 35		(1-1.5)		C		1											
146 35		(1-1.5)		C		1											
147 35		(1-1.5)		C		1											
148 35		(1-1.5)		C		1											
149 35		(1-1.5)		C		1											
150 35		(1-1.5)		C		1											
151 35		(1-1.5)		C		1											
152 35		(1-1.5)		C		1											
153 35		(1-1.5)		C		1											
154 35		(1-1.5)		C		1											
155 35		(1-1.5)		C		1											
156 35		(1-1.5)		C		1											
157 35		(1-1.5)		C		1											
158 35		(1-1.5)		C		1											
159 35		(1-1.5)		C		1											
160 35		(1-1.5)		C		1											
161 35		(1-1.5)		C		1											
162 35		(1-1.5)		C		1											
163 35		(1-1.5)		C		1											
164 35		(1-1.5)		C		1											
165 35		(1-1.5)		C		1											





CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Maryland, Hobbs, NM 88240  
(575) 393-2326 FAX (575) 393-2476

BILL TO

ANALYSIS REQUEST

Company Name: <u>C6</u>	P.O. #:
Project Manager: <u>Robert Neil</u>	Company: <u>C6</u>
Address:	Attn: <u>Robert Neil</u>
City:	Address:
State:	City: <u>Midland</u>
Zip:	State: <u>TX</u> Zip:
Phone #:	Phone #:
Fax #:	Fax #:
Project #:	
Project Name: <u>Empire South Unit # 15</u>	
Project Location: <u>Eddy Co NM</u>	
Sampler Name: <u>Rosa Perez</u>	

Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX						DATE	TIME	ANALYSIS REQUEST									
				GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :			TPH	BTEX	Chloride							
41002100	12	(1-1.5)	1							9/2/16		X	X	X							
38	42	(2-2.5)	1									X	X	X							
39	42	(2-2.5)	1									X	X	X							
40	44	(0-1)	1									X	X	X							
41	44	(1-1.5)	1									X	X	X							
42	45	(2-2.5)	1									X	X	X							
43	46	(0-1)	1									X	X	X							
44	47	(1-1.5)	1									X	X	X							
NFE																					

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By: <u>[Signature]</u>	Date: <u>9/2/16</u>	Received By: <u>[Signature]</u>	Date: <u>9/2/16</u>
Time: <u>1500</u>		Time: <u>1500</u>	

Delivered By: (Circle One)	Sample Condition	CHECKED BY: <u>[Signature]</u>
Sampler - UPS - Bus - Other:	Cool <input checked="" type="checkbox"/> Intact <input checked="" type="checkbox"/>	
	Yes <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/>	

REMARKS: See Remarks on PS 1

+ Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326



## APPENDIX D

Initial C-141



District I  
1625 N. French Dr., Hobbs, NM 88240  
District II  
811 S. First St., Artesia, NM 88210  
District III  
1000 Rio Brazos Road, Aztec, NM 87410  
District IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico  
Energy Minerals and Natural Resources

Oil Conservation Division  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

Form C-141  
Revised August 8, 2011

Submit 1 Copy to appropriate District Office in  
accordance with 19.15.29 NMAC.

## Release Notification and Corrective Action

### OPERATOR

☒ Initial Report ☐ Final Report

Name of Company: COG Operating LLC	Contact: Robert McNeill	
Address: 600 West Illinois Avenue, Midland TX 79701	Telephone No. 432-230-0077	
Facility Name: COI EMPIRE SOUTH UNIT #015	Facility Type: Battery	
Surface Owner: Private	Mineral Owner: Federal	API No. 30-015-22236

### LOCATION OF RELEASE

Unit Letter E	Section 08	Township 18S	Range 29E	Feet from the 1980	North/South Line North	Feet from the 660	East/West Line West	County Eddy
------------------	---------------	-----------------	--------------	-----------------------	---------------------------	----------------------	------------------------	----------------

Latitude 32.7637024 Longitude -104.103363

### NATURE OF RELEASE

Type of Release: Oil	Volume of Release: 90 bbls	Volume Recovered: 0 bbls
Source of Release: Lightning	Date and Hour of Occurrence: 8/29/2016 unknown	Date and Hour of Discovery: 8/29/2016 8:00 a.m.
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? Heather Patterson/NMOCD and Shelly Tucker/BLM	
By Whom? Dakota Neel	Date and Hour: 8/30/2016 12:48 p.m.	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.\*


Describe Cause of Problem and Remedial Action Taken.\*

This release was caused when lightning struck the facility. The facility was a total loss.

Describe Area Affected and Cleanup Action Taken.\*

The release impacted both the location and the pasture immediately surrounding the facility. Oil released during the incident was burned and non-recoverable. Concho will have the spill site sampled to delineate any possible contamination from the release and we will present a remediation work plan to the NMOCD for approval prior to any significant remediation work.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature: 	<b><u>OIL CONSERVATION DIVISION</u></b>	
Printed Name: Dakota Neel	Approved by Environmental Specialist:	
Title: Environmental Coordinator	Approval Date:	Expiration Date:
E-mail Address: dneel2@concho.com	Conditions of Approval:	Attached <input type="checkbox"/>
Date: September 16, 2016	Phone: 575-748-6933	

\* Attach Additional Sheets If Necessary

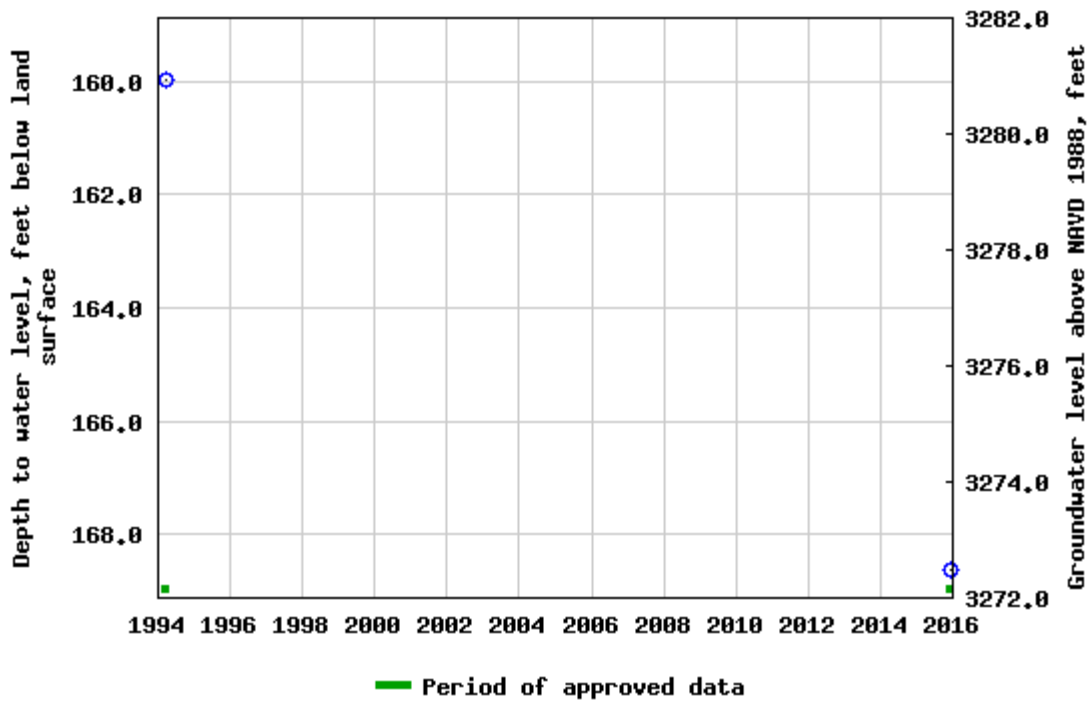


## APPENDIX E

### Groundwater Data



# USGS 324402104014701 18S.29E.24.14413





# USGS 324403104013601 18S.29E.24.23313

